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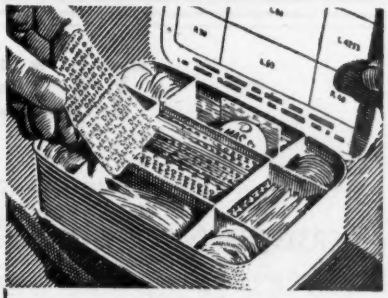

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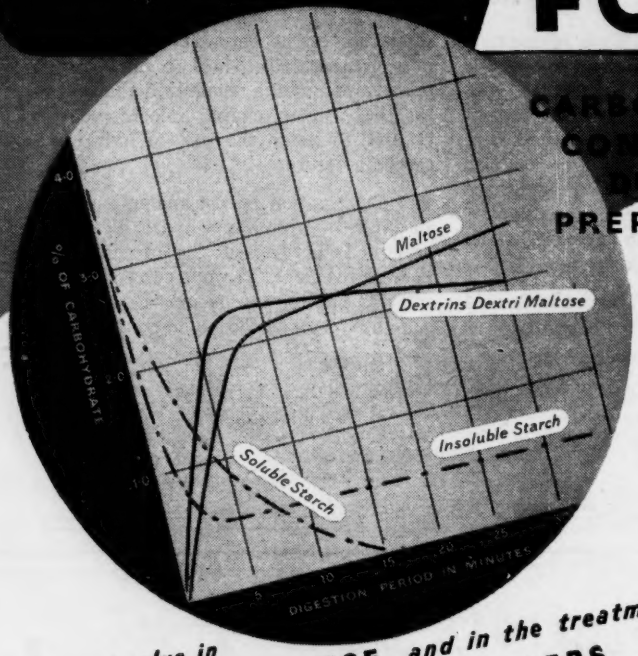

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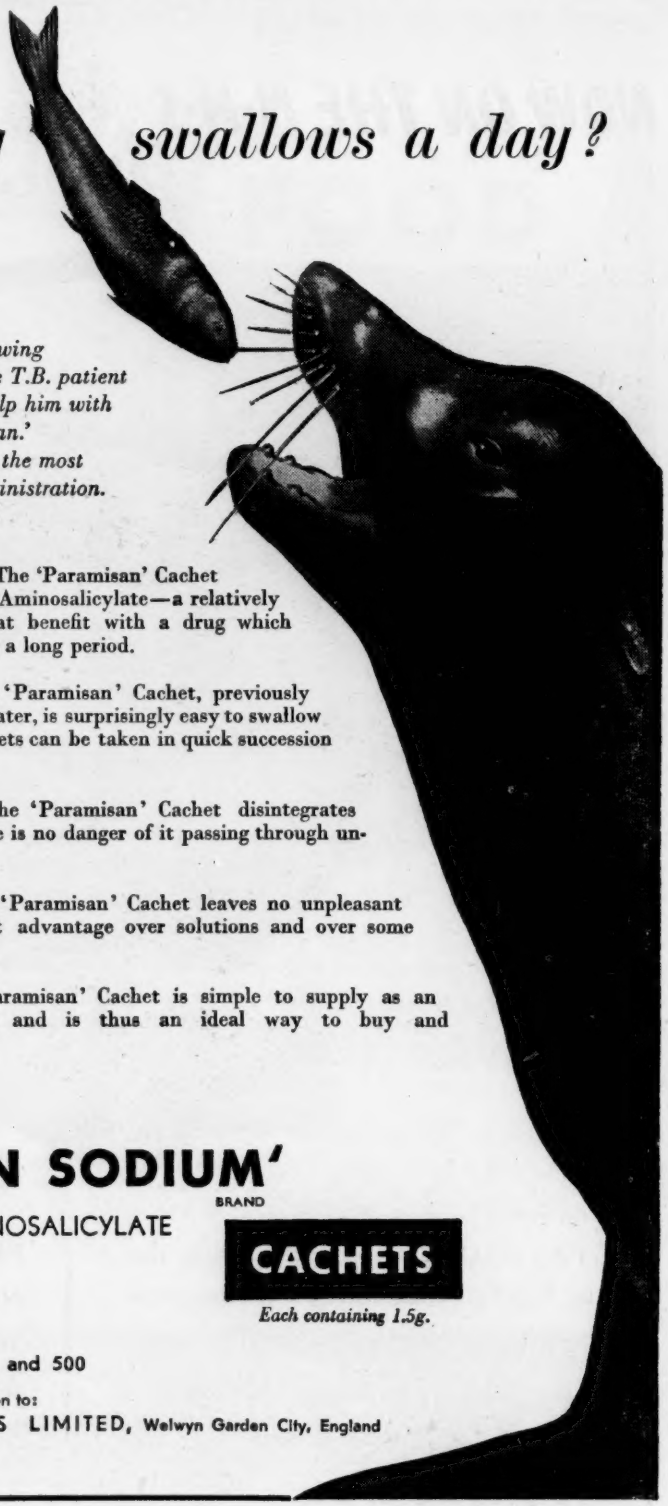

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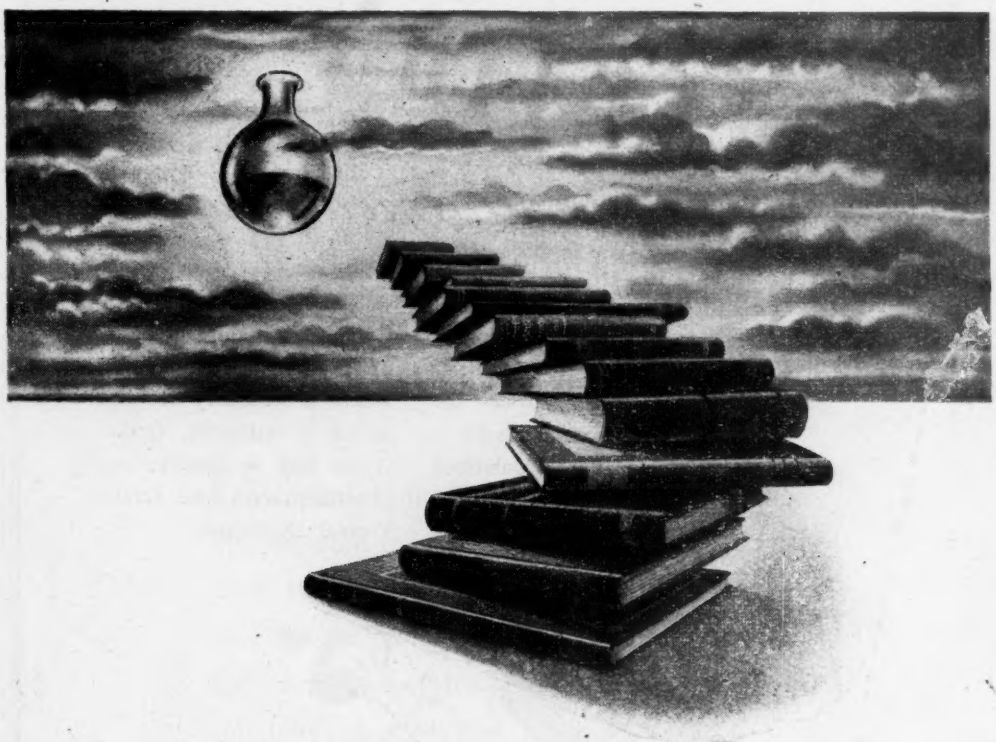

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* Clapham, *Pharm. J.*, 1950, **165**, 126

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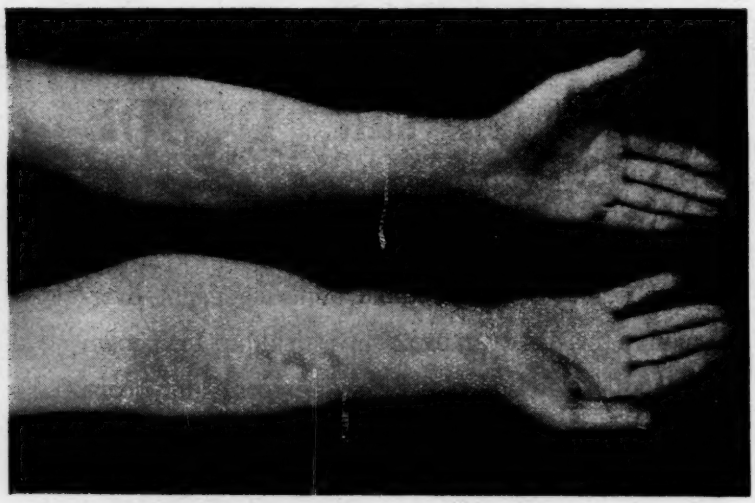

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ON CLINICAL MEDICINE*

F. M. R. WALSHE
M.D., D.Sc., F.R.C.P., F.R.S.
CONSULTING PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL

TODAY student and practitioner of medicine live in a fast-changing world of medicine, and do not breathe the stable and peaceful air in which, some forty years ago, I took my infant steps in medicine.

Then, clinical medicine seemed a simple and all-embracing conception of our activities. To misuse some words of Tennyson, "Her court was pure, Her reign serene," and we allowed ourselves only the venial infidelities of occasional excursions into a simple and limited clinical pathology, into what was called Public Health and Forensic Medicine, with some comic interludes—as we then thoughtlessly regarded them—into vaccination (to which no less than six lectures were devoted) and mental diseases, to which we gave as little time as we could. But with a fine sense of where our true love was to be found, namely, at the bedside or in the outpatient clinic, we did not allow these philanderings to distract us unduly from our allegiance to her.

Some of us still remain singleheartedly devoted to her; but we are a pathetic, a diminishing and, if the truth is to be told, a dilapidating band of ancient lovers wearing our archaic graces with a faintly ridiculous air.

The sad fact today is that clinical medicine, as we see her in that cosmopolitan crush known as the curriculum, is a damsel in distress with scarce a champion, her rights disputed by a growing band of bold-faced competitors, each of whom is wooed and praised by a more oddly assorted band of suitors than ever sought the hand of Portia or Penelope. Their names are legion; industrial medicine, social medicine, psychological and psychosomatic medicine, geriatrics, and so on—bigger and better names than ever we knew of forty years ago. A new debutante is now with us. Her name is "adaptation stress" and if we can be cajoled into making an honest woman of her, she will, we may be sure, be the fertile mother of her own litter of specialists.

All these and more are—to change my metaphor—the new lamps for old with which persuasive magicians seek to seduce the medical Aladdin in his youth and innocence.

And if all this is tempting to us, what a brave new world it offers to the community. The citizen, from cradle to grave, and at the price of a weekly stamp, may hope to be accompanied on his harassed journey through life by relays of specialists: the obstetrician, the pædiatrician, soon of course the pubertician and the climactician (subgroups of the species endocrinologist), and other experts in school and factory, until finally he declines, decrepit and exhausted, into the eager hands of the geriatrician and his sequent colleague the mortician: having enjoyed through all stages of the unequal contest a wide choice of psychiatric first-aid.

There is, I believe, a useful convention by which the pædiatrician passes us on at the age of 12 to his successor on the medical conveyor belt in our Welfare State. When, I ask my trembling contemporaries, does the hour strike at which we are passed on to the geriatrician to have our old bones trained for the Olympian games?

* * *

If my remarks do not seem to you sufficiently serious in form for the occasion, I humbly submit that they are not without substance; for the state of affairs I have sketched is surely the logical conclusion of much modern talk and planning on medical services and medical education.

Nearly a century ago a wise man said that the nonsense talked on education outweighed all the other nonsenses put together, and suspecting that this aphorism contains more than a little of the truth where we are concerned, it has seemed to me worth while to trace the growth of clinical medicine since the age of Sydenham, to see what has happened to it and what we are making of it in the medical education and practice of today. Is the clinical method still as important as Sydenham believed it to be?

* * *

Modern clinical medicine owes its birth to Sydenham who bridged the long gap between the ancient and the modern medical worlds by a return to the Hippocratic discipline. This rebirth was virtually contemporary with that of physiology. What, in the 17th century, Harvey did for physiology by the method of experiment, Sydenham did for medicine by the introduction of clinical study.

These two sources of inspiration and method in medicine have now joined to make a mighty stream; but what I am suggesting is that those of us who are, or who intend to be, practising doctors, the clinical source is still the primary one.

As we trace the development of clinical medicine since its renaissance in the 17th century, we see the appearance of a succession of new insights, of new and often opposing schools of thought, each of them dominant for a time, perhaps in one country more than in another, but then coalescing with earlier and with later influences to swell the main stream of medicine as we see it today.

Each new insight, each new method of approach seems to have made the progress of knowledge swerve from the course upon which it was set, and this in virtue of the excess inherent in all new doctrines that have vitality and are expounded by men of force and genius; for there is an element of excess in all greatness.

The pendulum of doctrine has never ceased to swing, and those whose efforts have disturbed, while they have sped, the steady march of progress, have always been persuaded that they were putting medicine on its true and final course at last. The illusion of dogmatic finality is no monopoly of the theologian, but is an ineradicable element in the human mind.

The impression of a changing and unstable equilibrium which the history of modern medicine gives us, should perhaps make us charitable to, and patient with, some of the current enthusiasms and apparent aberrations of thought in medicine. Each of these contains its grain of truth, but not the whole truth; and partial truths, not recognised as such, can be very dangerous.

What I shall call partial truth, or partial thinking, is still our gravest danger in medicine, and, surrounded as we now are by a vast and growing mass of diverse information, it is scarcely surprising that this should be so.

Looked at from this point of view, the brief and incomplete story of clinical medicine in the past three hundred years which I now give, may have a lesson for us in our time.

* * *

It was Sydenham who gave to clinical medicine the place of honour as a scientific discipline which, in my submission, it has never lost. He sought by the direct study of sick persons to write a natural history of diseases. Abandoning the theories and the abstract systems of his predecessors, he set out to describe visible signs and symptoms with accuracy and precision; to form notions of their combinations and sequences in illness of different kinds, and thus to form concepts of disease. He was the founder of nosography.

In this he displayed a fine clinical flair, an eye for the relevant and a capacity for discarding the irrelevant. Like all truly scientific observation, his was selective.

* The Schorstein lecture delivered at the London Hospital on October 19, 1950.

The devastating epidemics of contagious diseases in the London of his day provided him with a rich material for study, and he succeeded in differentiating smallpox, cholera, plague, measles, scarlet fever, chorea, and that dignified malady of more spacious days, gout. His descriptions of smallpox and of gout are classics that can be read with profit today.

Sydenham gave a great impulse to clinical medicine throughout Europe, but his work was not based upon any systematic knowledge or study of morbid anatomy, and his successors of the 18th century degenerated into mere classifiers, adding nothing new but creating an arid discipline of cataloguing and subdividing symptoms. The ultimate aim of medicine could never be the mere development of nosography: that is the differentiation and naming of a morbid state and its reference to a descriptive category. Changes in bodily function and structure, and factors of causation of disease were also necessary subjects of study and of knowledge if power over disease was to be achieved. Clinical study could not advance indefinitely in a vacuum, as it were, and without a parallel study of anatomical and physiological factors.

The necessary impulse which started medicine off once more in the stream of progress came from France, where in the early 19th century Bichat and Corvisart developed a systematic pathological anatomy, and the clinicopathological method was born.

It is easy now, and in some quarters popular, to decry what is called "deadhouse pathology," "scorning the base degrees by which we did ascend," but its study was an imperative condition of progress in medicine, and it remains a step which we must still tread today.

Bichat advanced from the notion of diseased organs to that of diseased tissues. For example, he pointed out that the inflammation of a serous membrane gave rise to phenomena of two orders: those peculiar to all serous membranes, and those determined by the organ in which the serous membrane was situated and of which it was a part.

Thus, pleurisy, peritonitis, meningitis lead to general and to special or localising symptoms. Looked at today this notion of Bichat's seems an obvious and an easy one, and those who have never skirmished on the frontiers of ascertained knowledge in medicine, or any other branch of science, may not know how hard-won are these flashes of intuition, these fertile generalisations, how revealing when they are achieved, and how immensely satisfying to the earnest seeker after light in dark places. They come from what Trotter has spoken of as the unresting contemplation of the facts of observation: a contemplation we are apt to be far too busy nowadays to secure for ourselves.

Corvisart, following Bichat, undertook the precise study of pathological changes in tissues and organs and sought to correlate them with clinically observed disorders. This step made possible another one. Up to this time clinical observation had been essentially an ocular matter: the patient was looked at rather than systematically examined. For clinical examination as we know it, we owe the first steps to Laennec, who sought to discover in the living subject the changes in the organs hitherto seen only post mortem. His great weapon to this end was the method of auscultation by the stethoscope, and by means of it he was able to form some judgment of the actual changes present in heart and lungs.

I doubt if most of us now have the amazing skill with the stethoscope which the older physicians of my student days achieved, though I used sometimes to suspect that some of the ultimate refinements of auditory perception, with accounts of which some auscultatory artists used to regale us, were little imaginative. Perhaps it is no longer essential that we should possess this degree of artistry; for other methods have come to lend us, and to lend us more easily and more certainly, some of the information gained by the stethoscope. But what the long bow was at Creçy, so was the stethoscope to our fathers in medicine, an essential weapon. Despise it not, nor suppose that the X-ray film is the universal and adequate substitute for its use. A stethoscope can go into any man's pocket, but we can't trail an X-ray plant and its operators round to every bedside.

Thus Laennec was able to construct a new series of clinicopathological pictures of disease, to distinguish the diverse pathological changes in the lungs, and in particular to form a unitary conception of pulmonary tuberculosis.

Those who followed him developed his methods, and gradually clinical medicine began to assume the form it still retains in essence, despite the vast accessions to knowledge that have ensued since his day.

From France, the new impulse spread. First, perhaps, to the Dublin school of medicine where Graves, Stokes Adams, Cheyne, and Corrigan gave their names to new clinicopathological complexes, and thereafter to this country where Addison, Bright, Parkinson, and others added further clarifications and nosological additions to knowledge.

* * *

It is perhaps difficult for us now at this time to realise what a revolution these few fertilising geniuses achieved in a few years. Out of the formless welter of chronic illness, fresh clinicopathological entities were isolated so that all could identify them and know them in their clinical and pathological aspects.

Even yet, however, clinical medicine was obviously incomplete, and became threatened by a stagnation of the same order that followed the impulse originally imparted to it by Sydenham, and the tendency to think of disease complexes as static concrete entities began to show itself. What was missing was the notion of ætiology, and the notion of process. There was no awareness of the fact that structural change must be preceded by functional change, and that disorders of function presupposed normal function. The notion of disease as disorder of normal function was necessary to the further evolution of medicine.

The new impulse to the introduction of physiological ideas in medicine may be said to have come from Germany from the middle third of the last century onward. There it gained strength and effected yet another revolution in medicine. Even here, perhaps, the germinal idea came from France, and from the physiologist Magendie, who explicitly refused to accept a true distinction between physiology and pathology, and emphasised that post-mortem findings of themselves could not account for all the clinically observed phenomena.

Nevertheless, it was really in Germany that physiological medicine, as its exponents proudly called it, came into its own. The study of disordered function and the interpretation of signs and symptoms in terms of function became the intense and fruitful study of men whose names are still familiar: Schwann, Remak, Henle, Traube, Virchow, Wunderlich, and others.

* * *

It would be difficult to overestimate the achievements of these men, and hard perhaps for some to appreciate the intellectual ferment in which they worked. Their aim was to penetrate deeper than the descriptive disciplines which were dominating medicine, and to understand the processes at work in disease.

To probe behind phenomena and to seek the principles they exemplify is the first step in a philosophy of medicine, for philosophy is the attempt to understand things by their causes.

Yet, as I have already observed, there is excess in all greatness, and once again the pendulum of opinion swung too far. The notion of process led inevitably to a distrust of the notion of specific diseases and their classification into groups, like animals or plants.

In a measure these German enthusiasts were right when they declined to accept a "disease" as a natural entity, as something in nature. In nature there are for the practising doctor only sick persons, and the composite average picture of disease we construct from the study of like illnesses in different persons is not something concrete, but simply a mental construct; and what the German physiological school was rejecting was what has been called "the fallacy of misplaced concreteness." Yet in exposing a logical error in current notions, they went too far when they denied the specific characters of many different illnesses which the insight of their predecessors had identified. In popular language, they threw out the baby with the bath water—as enthusiastic reformers are so apt to do—and failed to realise that descriptions of different forms of illness, nosography, remains and must always remain essential to the clinician.

Nevertheless, this physiological epoch in the medicine of the 19th century, incomplete as were its insights, was a great, nay an essential, step in the forward growth of medicine, and it had the additional and priceless merit that it saw the introduction of the experimental method in medicine.

Yet, here also, history repeated itself, and once more an outlook that transformed the face of medicine came in a measure, and for a time, to distort perspective, as when Virchow, ignoring the art of medicine, proposed that practical medicine should become applied theoretical medicine. Under his influence, the strength of which it is now difficult for us to appreciate who have no towering figures in medicine comparable with the giants of 90 or 100 years ago, the clinical method and nosography in general became disparaged, its progress delayed and the art of medicine ignored. I sometimes think that even yet the clinician has not wholly regained that pride in his discipline which its exacting nature and its record of achievements demand, and is prone to accept too easily and to apply uncritically the facts he is offered from the experimental laboratory.

The same attitude towards the clinical method was shown by Claude Bernard in France when he invited the physician to desert the bedside for the laboratory in his search for knowledge, since he—as many lesser men since—believed the clinical method of study was worked out like an exhausted vein of precious metal in a mine.

Yet while Virchow and Bernard were writing obituaries of the clinical method, Charcot and Trousseau in France and Hughlings Jackson and others in this country were still demonstrating what the clinical method could achieve, not only in nosography, but also in the philosophic understanding of normal and disease processes. After all, the clinician is perhaps the best judge of the usefulness of his methods.

Trousseau, indeed it was, who made one of the first steps in the next essential condition of advance in medicine, when he proposed "that what gives the specific diseases their immutable properties is not the quantity but the quality of the morbific cause": thus opening the stage of ætiological inquiry in medicine. To each particular cause of disease the system reacts with specific and characteristic phenomena. In other words, when we endeavour to construct typical clinical pictures we are taking a first step to track down some specific pathological cause.

At the time of Trousseau's death in 1867, Pasteur was engaged upon brilliant studies of the cause of fermentation and putrefaction, the fruit of which was to establish that many diseases were reactions to specific micro-organisms, and bacteriology was born.

Neither time nor your patience would allow me to discourse upon the revolutionary influence of what has been called the germ theory of disease upon medicine. My point rather is that this also, by its very success, tended to give a too exclusive outlook to the generation in which it developed and achieved its so striking triumphs.

Causation in disease was a larger and more complex problem than had yet been envisaged, and was the subject of a great deal of partial thinking—still current amongst us in those simple souls who like to see in chronic and obscure ill health the work of that nebulous concept "focal infection." A cynic has said that to "find a germ and stop thinking" is still the preoccupation of too many amongst us.

We have, in fact, forgotten Aristotle and his four orders of causation—material, formal, efficient, and final—and we are painfully relearning them in a terminology of our own, too often without realising that it is only a process of rediscovery.

In short, intemperate enthusiasms of doctrine still sway us, and perhaps never more than now when we see psychiatry and psychosomatic medicine running neck and neck, each seeking to become the master notion in modern medicine.

* * *

We have seen, then, in our time the progressive widening of our notions of causation, of ætiology, in disease. To bacteriology have been added insights derived from chemistry, biochemistry, and now physics, and from the intermittent and often smoky light of psychology.

From all this mass of knowledge, a more philosophic notion of causation is taking shape, and has found expression with admirable lucidity and conciseness in a paper by Dr. J. L. Halliday, entitled Principles of Ætiology, published in the *British Journal of Medical Psychology* in 1943. I could wish that this paper were far more widely known; for it is the best synthesis of a complex problem that I have met, and should be an admirable corrective to those recurrent accesses of dogmatic and partial thinking which, generation after generation, have disturbed the steady and rational process of growth in medicine.

A stage has now been reached when we realise that we have become increasingly dependent in medicine upon the application of biological and physical science to the solution of our problems. To take but a few obvious examples: the value of the X-ray film in the diagnosis of carcinoma of the lung, and its application of arteriography in the detection of intracranial aneurysm; and those blood and body-fluid examinations of almost infinite diversity which are needed for the elucidation of problems that clinical observation raises but cannot by itself resolve.

In short we may now be said, in a military metaphor, to have "a force of all arms" at our disposal in the recognition, study, and treatment of disease.

What, amidst this profusion of resources, is now the place and importance of clinical observation by the trained senses, which at one time comprised virtually the entire activity of the physician? Has it been displaced? May we relegate it to the realm of the obsolete? Is its pursuit a mere archaism?

We are now in a period of unprecedentedly rapid growth in medicine, and it would be foolish, and contrary to history, to suppose that we are not even now exposed to all the dangers of partial thinking. Indeed, with the growth of our resources these dangers multiply, and I fear that the notion of clinical observation as a largely worked-out method, as in some of its aspects an archaism, even more the notion that it has no secrets left to yield to its followers, have appeared amongst us and are in fact another manifestation of partial thinking.

I am suggesting to you the idea that perhaps the more balanced view is that for the clinician there is a hierarchy of methods at his disposal, and that, as in all hierarchies, one comes first and is indispensable.

I am suggesting that for the good clinician the clinical method—the method of history-taking and direct examination—takes primacy, and that without it, and the lead it gives the prudent doctor, medicine becomes a chaos of activities and techniques, a blind fumbling after the truth in any particular case.

It is the first clinical survey and judgment that determines what devices of applied science should be used and in what sequence; what special tests can be expected to yield a relevant answer and what cannot.

All this clinical survey demands of us something over and above the skilled employment of applied scientific methods. It demands experience and prudence, or practical wisdom.

In short, if I am right in my view, the clinical method of direct observation and examination has in it an element of practical wisdom, which the employment of scientific techniques of itself does not possess. It is relatively easy to acquire techniques, but judgment in their use is the reward of clinical experience carefully garnered. Judgment is of the essence of the clinical method in its fullness. It is easy to perform a lumbar puncture, but it is not so easy to know when and when not to perform it. It is simple to do an air ventriculogram, but apparently not so simple to know when to refrain from doing it—though indeed I have heard a surgeon say "it does nobody any harm to have air put into his ventricles"—naturally it was of someone else's ventricles that he was thinking when thus he spoke.

* * *

I return now to my military metaphor, that in which I spoke of the clinician facing his tasks of diagnosis and treatment with a force of all arms at his disposal: clinical, chemical, biochemical, physical, bacteriological, pathological, radiological, and so on.

Each such task that faces him is a different one; even the patient is no constant, but a sum of his inheritance, constitution and environment, and of the psychological influences that have helped to mould him. Therefore each task calls for generalship in the use of the available resources. Now a skilled general does not throw all his forces into every battle in an indiscriminate fashion. He chooses his weapons and the circumstances and the moment when he shall use them. In other words he uses judgment. His judgment may be fallible, the event may falsify it. Nevertheless, he remains aware that judgment, discrimination, and foresight are qualities expected of him and necessary to the maximal efficiency of his activities.

So each of us needs to show generalship in the use of our resources, and this generalship requires as a condition of its possession by us, clinical observation and clinical judgment. And, further, this generalship, as I am calling it, is demanded of us not only because it is a logical use of reason, but also on grounds of prudence; that prudence that bids us cherish first of all the welfare of our patients.

Now, you may say that it is never prudent to leave anything to chance, that more mistakes are made from carelessness than from ignorance. There is an element of truth in this, but it is not a justification for indiscriminate investigation, which is unintelligent, wasteful, and often a cause of discomfort and hazard to the patient. We still have the responsibility to plan systematically, to employ each test for an end we can both specify and justify, and to refrain from forms of investigation that can offer no relevant information and can promise no benefit to the patient.

I suppose it would not be an exaggeration to say that every day many hundred square yards of X-ray films are unnecessarily exposed and many man-hours of radiographers' time—not to mention a deal of money—are squandered. Pathologists and bacteriologists could, I feel sure, echo my complaint on this score.

I am not advocating a deliberate archaism of method; a refusal to be up to date; I am simply seeking to stress that the more resources we have the greater demand their use makes upon our intelligent forethought. They are demands upon clinical judgment and not substitutes for it.

It will be time enough for us to reproach the State for the number of forms it requires the doctor to complete, when we have put some check upon our own private orgies of chit-signing to the laboratory departments of our profession.

* * *

It seems to me, therefore, that there are two lessons we may learn from the history of modern medicine, lessons for the teacher not less than for the taught. That the clinical discipline is the real and only sound foundation of wisdom in the practice of medicine. Secondly, that a great safeguard against partial thinking and specialist enthusiasms is, at least for those who teach medicine, some measure of understanding of the history of modern medicine. This does not simply mean familiarity with the chronicles of medicine, which is what is commonly understood by the term "the history of medicine." After all, chronicles are merely the raw material of history. What we need is some appreciation of the movements of thought, the rise of new insights—their good and their bad influence. Modern medicine is rooted in its past, and of that past we should seek to understand the significance. Such an understanding is surely vital to the teaching of medicine. Only when we possess it can we hope to orient ourselves in the rapidly growing body of knowledge and avoid the errors and illusions of finality of our predecessors and of some of our contemporaries.

The one enduring and unbroken thread which runs through the past three centuries of medical history, sometimes hidden in the rich and intricate fabric of medical knowledge, but always holding it together and lending coherence to its pattern, is the clinical discipline. Without it, medicine must become a chaos of techniques employed by clever people devoid of humanism and practical wisdom.

ADJUVANTS TO STREPTOMYCIN IN TREATING TUBERCULOUS MENINGITIS IN CHILDREN

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OUR purpose is to amplify the preliminary communication of one of us (Cathie 1949b) on the use of streptokinase as an adjuvant to streptomycin in the treatment of tuberculous meningitis, and to compare the results with those of other treatment centres.

From February, 1947, when streptomycin became available for the treatment of tuberculous meningitis under the auspices of the Medical Research Council's trial (first 14 cases), until November, 1949, 60 cases have been admitted to the Hospital for Sick Children for treatment (table I). The first 20 (series A) were treated with streptomycin alone, and 5 (25%) of these are at present alive, of whom 4 have normal cerebrospinal fluid (C.S.F.).

This survival-rate of 25%, which accords with many other comparable published figures, was a great disappointment to us, and we felt that, although streptomycin could cure some of the cases (which no drug hitherto had been able to do), some other form of adjuvant therapy must be included if the survival-rate was to be improved.

We report here the results in 40 patients (series B), of whom 23 (58%) have survived, 17 with normal C.S.F., and discuss the adjuvant forms of therapy which have been used and which may have contributed to the improved survival-rate.

MATERIAL

Except for 2 cases which were treated independently and were not available to us, the cases in our two series were consecutive hospital admissions, and none has been excluded because of the severity of the condition or the shortness of the period of treatment. Table II shows that the series are comparable as regards age, severity, and presence or absence of miliary tuberculosis, as was to be expected when the children were consecutive admissions.

All the cases were proved bacteriologically, and all the patients were Mantoux-positive. The youngest child was aged 4 months, and the oldest 12 years. Since the last admission in series B was in November, 1949, all the patients referred to were under observation

TABLE I—ANALYSIS OF CASES

Case no.	Age on admission (years)	Severity	Miliary tuberculosis present or absent	C.S.F.		Signs of raised intracranial pressure	Treatment				Length of observation since admission (weeks)	Results	
				Film	Culture		Intraventricular drainage	No. of 6-week I.T. courses	Sulphetrone	Streptokinase		Weeks with normal C.S.F.	Final state
1	2½	S	−	+	+	+	−	..	−	−	25	..	Died
2	4	S	−	+	+	+	−	..	−	−	3	..	,,
3	½	M	+	+	+	+	−	..	−	−	30	..	,,
4	8	M	−	+	+	+	−	..	−	−	165	102	Recovery with nerve deafness
5	3	M	+	+	+	+	−	..	−	−	8	..	Died: resistant organism
6	½	S	−	+	+	+	−	..	−	−	15	..	Died
7	7	M	−	+	+	+	−	..	−	−	18	..	,,
8	2	M	−	−	+	+	−	..	−	−	22	..	,,
					G.P. +								
9	1	M	−	+	+	+	−	..	−	−	8	..	,,
10	2	M	+*	−	+	+	−	..	−	−	19	..	,,
11	11	M	+	+	+	+	−	..	−	−	29	..	,,
12	1¾	M	+	+	+	+	−	..	−	−	7	..	,,
13	7	S	−	+	+	+	−	..	−	−	141	*52*†	C.S.F. contained 14 cells per c.mm. after 52 weeks. Complete clinical recovery
14	2	E	+	+	+	+	−	..	−	−	1	..	Died
15	6	E	+*	+	+	+	+	..	−	−	51	..	,,
16	1½	E	+*	+	+	−	−	..	−	−	132	108	Complete recovery
17	2½	E	−	+	+	+	+	..	−	−	142	103	Recovery with mental deficiency
18	3½	S	−	+	+	+	+	..	−	−	24	..	Died
19	1¾	E	+*	+	+	+	+	..	−	−	18	..	Died: resistant organism
20	7	S	−	+	+	+	+	..	−	−	126	69	Recovery with slight residual hemiplegia
21	1½	E	−	+	+	+	+	2	+	+	73	..	Relapsed after normal C.S.F. and died
22	13	S	−	+	+	−	−	1	+	+	126	81	Complete recovery
23	11	M	+	+	+	+	+	1	+	+	19	..	Died
24	3¼	M	+	+	+	−	−	3	+	+	115	16	Complete recovery
25	¼	E	+	+	+	−	−	1	+	+	107	95	,,
26	3½	S	−	−	+	+	+	1	+	+	7	..	Died
27	5¼	M	−	+	+	+	+	1	+	+	106	60	Recovery with slight residual hemiplegia
28	¼	S	+	−	+	+	+	1	+	+	20	..	Died
29	3	E	+*	+	+	−	−	1	+	+	105	80	Complete recovery
30	3¾	M	−	+	+	−	−	1	+	+	103	70	,,
31	½	S	−	+	+	+	+	2	+	+	102	74	Recovery with gross hydrocephalus and mental deficiency
32	¾	M	−	+	+	+	+	1	+	+	102	63	Complete recovery
33	2½	S	−	+	+	+	+	1	+	+	24	..	Died
34	1	M	+	+	+	+	+	1	+	+	11	..	,,
35	2½	M	+	+	+	−	−	2	+	+	14	..	Died: resistant organism
36	1	E	+*	+	+	+	+	2	+	+	28	..	Died
37	¾	M	−	−	+	+	+	1	+	+	98	*67*†	C.S.F.: protein 200 mg. per 100 ml. Complete clinical recovery
38	4½	M	−	+	+	+	+	1	+	+	95	58	Complete recovery
39	½	M	−	+	+	+	+	1	+	+	16	..	Died
40	5½	E	−	+	+	+	+	2	−	+	14	..	Died: resistant organism
41	1½	E	+*	−	+	−	−	2	−	+	60	9	Complete recovery
42	5	E	−	−	+	−	−	1	−	+	68	20	,,
43	4¾	M	+	+	+	+	+	1	−	+	66	33	,,
44	2½	S	−	+	+	+	+	1	−	+	65	..	Died
45	4	S	+	+	+	+	+	2	+	+	17	..	Died: resistant organism
46	1¾	M	+	+	+	+	+	1	−	+	62	34	Complete recovery
47	7	M	−	+	+	−	−	1	+	+	61	31	,,
48	5½	S	+	+	+	+	+	2	+	+	9	..	Died
49	3½	M	−	+	+	+	+	1	+	+	15	..	,,
50	5¾	M	−	+	+	−	−	2	+	+	56	*9*†	C.S.F.: 18 cells per c.mm. Complete clinical recovery
51	6¼	E	+	+	+	−	−	1	+	+	50	31	Complete recovery
52	3¼	M	+	+	+	−	−	1	+	+	48	7	,,
53	2	M	−	+	+	+	+	1	+	+	11	..	Died
54	1¾	E	+	+	+	+	+	2	+	+	32	..	,,
55	1¼	M	−	+	+	−	−	1	+	+	36	*14*†	C.S.F.: 8 cells per c.mm. Complete clinical recovery
56	3¼	M	−	+	+	−	−	1	+	+	32	..	C.S.F.: 34 cells per c.mm., protein 60 mg. per 100 ml., sugar normal for 5 weeks. Complete clinical recovery
57	4½	E	+*	+	+	+	+	1	+	+	32	*12*†	C.S.F.: 32 cells per c.mm. Complete clinical recovery
58	3	M	−	+	+	−	−	1	+	+	30	..	C.S.F.: 8 cells per c.mm., protein 50 mg. per 100 ml., sugar normal for 4 weeks. Complete clinical recovery
59	½	E	−	+	..	+	+	1	+	+	29	5	Complete recovery
60	3	M	−	+	+	+	+	1	+	+	8	..	Died

* Cases developing meningitis while on treatment for miliary tuberculosis. † The period is italicised where some abnormality remained.

Cases 25 and 32 developed spinal caries after 80 and 9 weeks respectively in which their C.S.F. was normal, and in neither case has there been relapse of meningitis. Case 38 developed tuberculous arthritis of the knee after 12 weeks with normal C.S.F. without meningeal relapse.

TABLE II—HOMOGENEITY OF SERIES A AND B AS REGARDS AGE, SEVERITY OF ILLNESS, AND PRESENCE OF MILIARY TUBERCULOSIS

Series	Age (yr.)		Miliary tuberculosis		Severity of illness on admission		
	Below 3	Above 3	Present	Absent	Early	Moderate	Severe
A (20 cases)	11 (55%)	9 (45%)	5 (25%)	15 (75%)	5 (25%)	9 (45%)	6 (30%)
B (40 cases)	18 (45%)	22 (55%)	13 (33%)	27 (67%)	11 (27%)	21 (53%)	8 (20%)

for at least six months and so, if they survived, received our standard six months' intramuscular treatment.

BACTERIOLOGY

Of our 60 cases 1 was treated partly at another hospital, where *Myco. tuberculosis* was seen but cultures were not made. This leaves us with 59 cases. In 58 (97%) of these the *Myco. tuberculosis* was grown on culture; in the other it was grown from guineapig inoculation. From the beginning the routine was to wait for a fortnight for cultures to become positive on Lowenstein-Jensen's medium; if at the end of this time there was no apparent growth, guineapigs were inoculated with the pooled sediment remaining from routine lumbar punctures. This was necessary three times, although in two of these cases the initial cultures became positive after it had been thought necessary to inoculate a guineapig. With such a high rate of positive cultures there was no reason to alter this routine, which proved very economical of guineapigs.

Of the 59 patients seen from the start of their illness *Myco. tuberculosis* was found on direct examination of the C.S.F. in 52 (88%). The determining factor in this high rate of positive films seems to have been their method of preparation: after centrifugation the part of the sediment to be examined was deposited in pinhead drops on the slide. By this means it was possible to examine the whole deposit rather than the small portion which is examined when such a drop is smeared.

From the 59 cases the initial culture was sensitive to streptomycin, the greatest concentration necessary to inhibit growth being 0·5 μg. per ml. No organism was more than twice as resistant as the standard strain of *Myco. tuberculosis*, H37Rv (cf. Medical Research Council 1948).

Every specimen of C.S.F. was cultured as a routine. In addition, where possible, necropsy samples were cultured. Five strains completely resistant to 2000 μg. of streptomycin per ml. were recovered from the 32 patients who died, giving an incidence of 8·3% in our 60 cases. This does not agree with other workers' findings and may possibly be due to the routine culturing of all C.S.F. samples.

All our patients were Mantoux-positive, and treatment was not instituted in the face of a negative reaction except in 1 child who proved to have a cerebellar tumour. Where practicable we have proceeded straight to a strength of 1/100. We have seen no reaction, local or general, of such violence that we have regretted it, and it avoids the occasional loss of forty-eight hours while waiting for a 1/1000 test to prove negative.

CEREBROSPINAL FLUID

Normal.—We regard normal C.S.F. as having at least 45 mg. of sugar per 100 ml., 40 mg. or less of protein per 100 ml., and 4 or fewer cells per c.mm. We have adhered rigidly to these criteria in calling a C.S.F. normal.

Abnormal.—We have nothing to add to the findings of the Medical Research Council (1948) or those of Rubie and Mohun (1949), MacCarthy and Mann (1950), and others. The C.S.F.-chloride level gave us little help. The C.S.F.-glucose level was the most consistent aid in diagnosis and prognosis, and indicator of recrudescence. The shortest time in which the C.S.F. returned to normal was twelve weeks (case 25). On the other hand, case 13 has been off all treatment for two years and back at school for one and a half; yet, with a normal chemistry for a year, his C.S.F. still has 14 cells per c.mm., with no tendency for them to diminish. Although as the result of the treatment he may have established new normals for himself, we cannot by our criteria call him a complete recovery.

METHODS

The first 14 cases of series A were treated with continuous intramuscular streptomycin for six months and periods of a month's daily intrathecal streptomycin by the lumbar route with intervening rests. The dosage was that recommended by the Medical Research Council (1948). In the last 6 cases of series A the number of intrathecal injections was gradually reduced. Series B was treated with the same dosage of intramuscular streptomycin for six months, and the intrathecal course aimed at was daily for a fortnight, every other day for a fortnight and every third day for a fortnight, making a total of twenty-four intrathecal injections. At the end of such a course intrathecal therapy was stopped to see what would happen in the C.S.F. If the C.S.F. showed signs of improvement, no further intrathecal treatment was given; but, if there was any sign of deterioration, a further six-week course was given. Particular attention was paid to the C.S.F.-glucose level.

'Sulphetrone' and streptokinase were added to the streptomycin with each intrathecal injection in series B, except for 6 who received no sulphetrone. The dose of sulphetrone was 0·05 g. for children under the age of 3 years and 0·1 g. for older children. Streptokinase was given in doses of 0·5 and 1 ml. respectively to these age-groups, the titre of the preparation being about 1/600 (Cathie 1949a).

Ventricular drainage was used in series B whenever it was considered necessary.

SULPHETRONE

After a visit to Prof. C. Cocchi's clinic in Florence in 1947, where we were impressed by his results with streptomycin and sulphone, we decided to incorporate a sulphone in our treatment. At that time sulphetrone seemed to be the least toxic (Brownlee et al. 1948a and b); so we chose that. We soon found that to obtain C.S.F. levels of 1·5 mg. per 100 ml. with oral or intramuscular sulphetrone we had to give toxic doses. Since such levels were roughly only a hundredth of the bacteriostatic level for *Myco. tuberculosis*, we decided to give intrathecal sulphetrone in doses of 0·05 or 0·1 g. This seemed to have little irritant effect on the meninges and mixed readily with streptomycin. Unfortunately 50% of the sulphetrone so given was excreted within six hours, and at twenty-four hours only 2–5 mg. per 100 ml. remained. Since, however, sulphetrone was thought to have a synergistic action with streptomycin it was given in 34 cases.

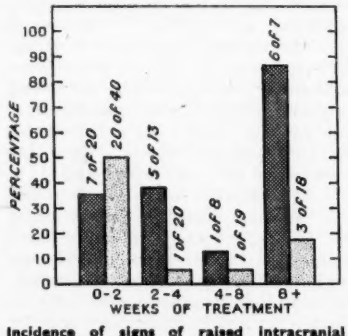
After 19 cases had been treated with streptomycin, streptokinase, and sulphetrone, and it had become clear that the results were improving considerably, sulphetrone was omitted from the next 6 cases so that the part played by it could be assessed. We then felt it desirable to reintroduce the sulphetrone for the remaining 15 cases of series B while the 6 who did not receive it were being observed. Of the 34 treated with sulphetrone 19 (56%) are alive. Of the 6 who did not receive it 4 survived. Although the numbers are too small to be of much value they confirm an impression that sulphetrone plays little part in recovery from tuberculous meningitis, and we are not using it any longer. In this conclusion we are supported by that of the Veterans' Administration (1949), whose streptomycin results were not improved

in 43 cases in which 'Promizole' was used as the sulphone adjuvant. Before a final opinion can be reached on the value of a sulphone the results of Professor Cocchi (see below) and those of Lincoln and Kirmse (1949) must be considered. Lincoln and Kirmse reported that 13 out of 18 cases appeared to be doing well 3–6 months after treatment had started with promizole as an adjuvant, and a follow-up of these cases is awaited with interest.

STREPTOKINASE

In the search for some adjuvant which would promote lysis of the fibrinous exudate in tuberculous meningitis we turned to streptococcal fibrinolysin, or streptokinase (Cathie 1949a), and a preliminary report of its apparent efficacy was published (Cathie 1949b). Briefly, it was found that streptokinase could in vitro lyse fibrinous exudate taken from the base of the brain post mortem. Streptokinase has also unblocked an internal hydrocephalus in a *Hæmophilus influenzæ* meningitis and, when given alone, has caused tubercle bacilli to reappear in the C.S.F. in cases where treatment had been abandoned.

Streptokinase was standardised on fibrin clots prepared from plasma which were comparable to the spider's-web clots of C.S.F. in cases of tuberculous meningitis. Assuming that a hundredfold dilution occurred when 1 ml. was injected intrathecally, a preparation was used whose potency was such that a dilution of 1/600 could lyse our standard clot in an hour. By our method of preparation streptokinase was miscible without deposit only with the calcium-free salts of streptomycin. When given alone intrathecally it caused a pleocytosis similar to that seen with streptomycin, with some small increase in the amount of protein. Occasionally it gave rise to pyrexia, but in no case in series B did it cause a reaction severe enough to lead to its omission.



Incidence of signs of raised intracranial pressure: hatched columns, series A; stippled columns, series B.

In series A, when streptokinase was not available, signs of increased intracranial pressure were present at some time in 19 of the 20 cases; these signs came on in the first fortnight in 7 cases and later in 12. In series B, all of whom had streptokinase, similar signs were present in only 25 cases out of 40, coming on in the first fortnight of treatment in 20 cases and later in 5. It seems reasonable to suppose that streptokinase, if it can affect the exudate, would take some time for its effect to become manifest. We have therefore considered indications for intraventricular catheterisation arising within the first fortnight and subsequently after the start of treatment. In series A, without streptokinase, these indications were seen later in 12 out of 20 cases (60%). After the introduction of streptokinase, in only 5 cases out of 40 (12%) was catheterisation considered necessary after the first fortnight. The accompanying figure shows the percentages of those patients at risk who developed signs of raised intracranial pressure in series A and B in the first fortnight and subsequently.

Case 37 was atypical in that he presented with signs of a block in the dorsal region, confirmed by a myelogram. Tubercle bacilli and a protein content of 3400 mg. per 100 ml. were found in the lumbar C.S.F., whereas C.S.F. obtained by cisternal puncture was almost normal. 1 ml. of 1% methylene-blue injected into the ventricle did not stain the lumbar C.S.F. The patient was treated with streptokinase alone for a month, 1 ml. on alternate days by the ventricular and lumbar routes. Methylene-blue was first detected in the lumbar C.S.F. after ventricular injection at the end of three weeks. The patient was next treated with intrathecal streptomycin, and made an excellent clinical recovery, but the lumbar C.S.F. still contains 200 mg. of protein per 100 ml. after ninety-eight weeks' observation.

VENTRICULAR DRAINAGE

In considering series A we were bound, like other workers, to be struck by the overwhelming incidence of hydrocephalus, both at necropsy and as demonstrated by air encephalography in the survivors. So near was this incidence to 100% that it seemed reasonable to institute ventricular drainage at the start of treatment as a prophylactic measure. Yet some patients recovering with hydrocephalus appeared entirely normal; hence catheterisation was reserved for those cases in which we felt that there was a clear indication that relief of intracranial pressure would alleviate the symptoms.

The indications for ventricular drainage and their incidence were as follows:

Indication	*No. of cases*	*% of total*
Coma, or increasing drowsiness	27	62
Papilloedema, or blurring of optic disc	29	66
Intractable vomiting	27	62
Fits	16	36
Changes in the lumbar flow of C.S.F.	14	31
Generalised spasm	10	23

Though any single one of these indications would have warranted catheterisation, with the exception of blurred discs they seldom occurred singly. In a few cases a rapid general deterioration in the patient's state without particular symptoms led us to insert catheters, and in every such case the intracranial pressure was found to be greatly increased.

At first intraventricular catheterisation was regarded as a major operation, and secondary sepsis was feared. We are now less frightened of sepsis; catheterisation is usually done by the resident surgeon, and for ease of nursing and the comfort of the patient an anterior approach to the lateral ventricle is chosen. In infants with the fontanelle still open direct needling of the lateral ventricle is easily done, and there is consequently no need for catheterisation.

An advantage of catheters, apart from the relief of pressure, is that therapy can be given by the ventricular route, and thus rest can be given to the lumbar area as well as the patient; moreover, in those infrequent cases where the hydrocephalus is internal there might theoretically be an advantage in attacking the exudate from above. Also, whereas release of excess C.S.F. via the lumbar route may predispose to coning of the cerebellum into the foramen magnum, ventricular drainage should tend to prevent this.

RECRUDESCENCE AND RELAPSE IN RELATION TO 6 WEEKS' INTRATHECAL TREATMENT

In our early cases we had felt that perhaps we were overtreating by the intrathecal route, particularly in view of the known toxic effects of streptomycin. Therefore in the last 6 cases of series A the number of intrathecal injections was progressively reduced, because it was thought that we were not likely to obtain worse results than 2 survivors out of 14. The clinical response in 3 of these 6 was sufficiently encouraging for us to decide to aim at a six-week course in series B. Actually these 3 survived.

Only 1 of our patients (case 21) has shown a true relapse, which came on three months after the C.S.F. had become normal. An attack of measles after the child had apparently recovered may have contributed to this, although the child was admitted and treated with intramuscular streptomycin during the illness. In 5 other children, who showed excellent clinical improve-

ment and a C.S.F. returning to normal, there was a relatively sudden deterioration in the C.S.F. followed by clinical relapse. They all died, and in each case the tubercle bacillus was later shown to have become completely streptomycin-resistant. 2 of these cases were in series A: one had had continuous intrathecal treatment until death, and the other had had an eleven-week intrathecal course. The 3 other cases, in series B, had had the six-week intrathecal course.

Three of series B (cases 31, 41, and 50) were given a second six-week course because, although the clinical condition was good, the C.S.F.-sugar level was not considered satisfactory; they all survived. 3 children (cases 36, 48, and 54) had a second intrathecal course because the C.S.F. did not improve after the end of the first and the clinical condition had deteriorated concomitantly; they all died. In case 24, after completion of intrathecal and 6 months' intramuscular streptomycin therapy the C.S.F. remained abnormal. After six weeks tubercle bacilli reappeared, and the patient was given another six months' intramuscular streptomycin and two six-week intrathecal courses with apparent recovery. The C.S.F. in this child has now been normal for four months.

With our rigid criteria of C.S.F. normality, only case 21 can be called a true relapse, and the others, in some of whom the C.S.F. was approaching normal, are regarded as recrudescences. For this reason we are chary of mentioning cases "doing well," and little is yet known of the prognostic significance of a C.S.F. that remains abnormal.

In series B, besides the 3 cases with streptomycin-resistant tubercle bacilli, the 3 who died in spite of further treatment, and the 1 who died in relapse, there were 10 who after six weeks were either dead or in such a hopeless state that treatment was abandoned. These 10 would have had the same outcome whatever the intrathecal course of steptomycin. Thus there were 23 cases out of 40 who recovered with the six-week intrathecal schedule: 19 after a single course, 3 after a second six-week course, and 1 after six months' re-treatment. We are well aware that the adjuvant therapy played a part in the recovery-rate, but the figures show clearly that as good survival-rates may be obtained with 24 intrathecal injections as by treating with intrathecal streptomycin for much longer periods or until a normal C.S.F. is attained.

Of the 3 strains of streptomycin-resistant tubercle bacilli 2 were grown in the twelfth, and 1 in the fifteenth, week of illness, in each case after many weeks of sterile cultures. In no case was developing resistance seen, adjacent positive cultures being sensitive and totally resistant. We do not know whether longer or shorter periods of intrathecal treatment than six weeks would avoid this catastrophe, nor have we sufficient cases to answer the question; but, following the Medical Research Council's (1949) report we have added *p*-aminosalicylic acid (given by mouth) to the battery of drugs in the hope that the number of resistant strains will diminish.

TABLE III—COMPARISON WITH RESULTS OF OTHER CENTRES

Source	No. of cases treated	No. of cases proved	Selected or unselected	No. of survivors	
				Off all treatment	With normal C.S.F.
1948:					
Choremis et al.	63	45	Sel.	27 (43%)	?
Debré et al.	93	?	Unsel.	35 (38%)	?
Fouquet	39	?	Sel.	19 (49%)	?
Frontali	98	98	Unsel.	30 (31%)	30 (31%)
Medical Research Council	105	105	Unsel.	27 (26%)	?
Orrego	38	?	Unsel.	12 (32%)	?
1949:					
Bernard et al.	100	92	Unsel.	27 (27%)	?
Capon and Todd	55	?	Unsel.	12 (22%)	?
Dubois et al.	83	?	Unsel.	53 (64%)	?
Fornara	24	?	Unsel.	10 (42%)	6 (25%)
Hooft and Denève	50	?	Unsel.	8 (16%)	8 (16%)
Levinson (I.M. streptomycin alone)	33	?	Unsel.	10 (30%)	?
Pasquinucci: 1st series	57	57	Unsel.	13 (23%)	8 (14%)
2nd series	66	66	Unsel.	31 (47%)	28 (42%)
3rd series	60	60	Unsel.	Many still under treatment	14 (23%)
Rubie and Mohun	54	50	Unsel.	18 (33%)	14 (26%)
Scottish Streptomycin Subcommittee Trial	81	77	Sel.	31 (38%)	?
Veterans' Administration (with promizole)	160	160	Unsel.	38 (24%)	?
	43	43	Unsel.	7 (16%)	?
1950:					
MacCarthy and Mann	43	40	Unsel.	14 (33%)	8 (19%)
Russell and MacArthur	33	32	Sel.	15 (46%)	?
Cathie and MacFarlane:					
Series A	20	20	Unsel.	5 (25%)	4 (20%)
Series B	40	40	Unsel.	23 (58%)	17 (43%)

OTHER RESULTS

The results published from other treatment centres which have had large enough series of cases are summarised in table III. Much of the information is obviously unsatisfactory. In some instances the cases were selected because of their likely response to streptomycin therapy; in others meningitis with miliary spread was excluded; and in some there is doubt whether the cases were proved or not.

There is little information about the final state of the C.S.F. Since some of the patients were still under treatment, this is not surprising; but, since the persistence of abnormality in the C.S.F. may be of prognostic significance, we have felt that it is essential for the C.S.F. to be normal before a case can be regarded as a recovery.

Table III shows that Professor Cocchi (reported by Pasquinucci 1949) divided his cases into three series, all treated with sulphone and different schemes of streptomycin dosage. We do not know how well the third series has done, because at the time of publication many patients were still under treatment; but the second series, with 47% survivors and 42% with normal C.S.F. out of 66 unselected proved cases, bears favourable comparison with anything yet published. Since the first series of 57 cases, with 23% survivors and 14% with normal C.S.F., was, like the second series, also treated with sulphone as an adjuvant, the variation being in streptomycin dosage, we feel that the greatly improved results point to the streptomycin dosage rather than to the sulphone as the responsible factor.

Cocchi (1949) thinks combined treatment with streptomycin and sulphone makes for less frequent development of streptomycin resistance in the tubercle bacilli, as has been suggested for that with streptomycin and *p*-aminosalicylic acid. Our results with sulphetrone do not answer this question either way.

In his third series it is noteworthy that Cocchi is using intraventricular catheterisation, and he is optimistic about the ultimate results. The other treatment is as in the second series.

DISCUSSION

The results we have obtained with the scheme of treatment outlined do not suffer by comparison with any others. In attempting to evaluate the adjuvants which have increased the survival-rate we are bound to be perplexed by their number and the difficulty in assigning a part to each. We are not at present in a position to pass final judgment on sulphetrone, although our impression that it is not of great value finds support in the experience of other workers and possibly from Cocchi's results.

We are convinced that ventricular drainage is a life-saving measure in acute hydrocephalus and should be resorted to wherever there are indications of a raised intracranial pressure. But this measure is entirely symptomatic, and can have no effect upon the tuberculous process.

It is our view that streptokinase has been the most important single factor in the improvement in the second series of cases. By its effect it may predispose to earlier healing, but its major effect has been in the reduction in the number of cases which developed signs of a raised intracranial pressure (19 out of 20 in series A, against 25 out of 40 in series B). The indications of its positive, rather than prophylactic, value have already been pointed out. Judging by the requests we have received for streptokinase for cases of established hydrocephalus, there seems to be some misconception of the part it can play. While in our experiments we have found streptokinase to be capable of lysing gelatinous exudate it has no effect on fibrous tissue at all; and to try and lyse the organising exudate usually present by the time hydrocephalus has appeared with a fibrin lysin is to attempt the impossible. Thus streptokinase must be given from the commencement of treatment if its full effect is to be obtained, and we have found it is of no value late in the disease.

The last point in favour of the scheme of treatment outlined is that our results have been achieved with, on the average, 24 intrathecal injections. This clearly holds advantages over the present tendency to treat intrathecally until a normal C.S.F. is achieved, particularly if the time necessary to attain such a result is considered from the patient's point of view.

Finally, we feel that no patient can be treated by a hard and fast scheme or rhythm of injections. Cases of tuberculous meningitis differ so widely from one another that every case should be treated with some régime that will permit of almost indefinite variation.

SUMMARY

The results obtained in two comparable series of tuberculous meningitis are presented.

In a series of 20 cases treated with streptomycin alone there were 5 (25%) survivors, 4 with normal C.S.F.

In a series of 40 cases treated with streptomycin, streptokinase, most of them with sulphetrone, and intraventricular drainage where indicated, there were 23 (58%) survivors, 17 with normal C.S.F.

The part played by the adjuvants used in the series of 40 cases is discussed.

The results obtained by other treatment centres are summarised.

We are greatly indebted to the physicians of The Hospital for Sick Children, under whose care the cases were, and particularly to Prof. A. A. Moncrieff for his constant interest. Thanks are also due to the nurses, on whose shoulders the burden of treatment has fallen, and to our surgical colleagues for help with the catheters.

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TREATMENT OF ACUTE BARBITURATE POISONING

A COMPARISON OF NIKETHAMIDE AND AMPHETAMINE*

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EARLIER investigations of barbiturate poisoning have proved the importance of active therapy aimed partly at removal of the ingested poison from the body and partly at maintaining the fluid-salt balance and the circulation. It is only during recent years that these conditions have been fully understood, and the clinician has only lately appreciated the necessity for frequent assessment of the state of the circulatory and the fluid-salt balance.

The object of the present study was to compare the value of nikethamide and of amphetamine as cerebral and circulatory stimulants in the treatment of acute barbiturate poisoning. A total of 193 patients with barbiturate poisoning were treated on exactly the same principles, except that in the first 61 cases nikethamide was used as a stimulant and in the subsequent 132 cases amphetamine. The mortality in the amphetamine series was only a fifth of that in the nikethamide series; moreover, the cases in the amphetamine series had an obviously less eventful course, with fewer complications.

MATERIAL

The material comprises the cases of acute barbiturate poisoning admitted to the University Medical Clinic in Aarhus from Nov. 1, 1946, to June 1, 1949. Slight cases in which stimulation was not required, or in which only prophylactic stimulation was used, are not included.

TREATMENT

In all the cases, without exception, the treatment was as follows:

(1) Aspiration of the stomach and gastric lavage with 10 g. of medicinal charcoal in 250 ml. of water, followed by instillation of 30 g. of medicinal charcoal and 15 g. of magnesium sulphate in about 500 ml. of water.

In patients who on admission were comatose or later lost consciousness the following measures were taken:

(2) Stimulation with nikethamide or with amphetamine.

(3) Stimulation of peristalsis with neostigmine 1 mg. four-hourly till carbon had been evacuated per rectum or the patient was awake.

(4) Prophylactic measures against pneumonia with sulphonamides or penicillin, or both.

(5) Parenteral administration of at least 2–3 litres of fluid per twenty-four hours, to maintain the fluid balance.

Every comatose patient was placed in bed with his head low, and mucus was aspirated from the larynx as long as the comatose and semicomatose state lasted; this was done with an ordinary water suction pump. If necessary, mucus was removed from the trachea and bronchi by bronchoscopy. The pulse-rate and temperature were recorded every hour, and the blood-pressure and hæmoglobin percentage every second hour. A catheter was passed twice every twenty-four hours, and serum-protein, serum-chloride, serum-bicarbonate, and blood-urea levels were determined once every twenty-four hours. If the hæmoglobin percentage increased more than 10% ("imminent shock"), or if signs of manifest shock were found, a blood-transfusion was given—generally 1 litre at a time. Pulmonary œdema was treated by intravenous strophanthin (0·25 mg.) and 50% solution of glucose (100 ml.); in one case

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venesection was done. If cyanosis was present, oxygen was given.

During the first ten months, nikethamide was used as stimulant (Strömgren 1943). A 25% solution was used; 10 ml. intravenously and 10–15 ml. intramuscularly were given at once, and then 5–20 ml. an hour was injected, according to the patient's response. Sulphonamides were used prophylactically against pneumonia.

During the following twenty-one months amphetamine was used as stimulant. An intravenous injection of 20–50 mg. (according to the estimated depth of the narcosis) was given at once, followed by 50 mg. per hour, generally intramuscularly. In a few very serious cases 100 mg. per hour was given for short periods. As a prophylactic measure against pneumonia penicillin, in a few cases combined with sulphonamide, was used.

RESULTS

The material has been divided into slight and severe cases. Severe cases comprise patients who were comatose on, or at some time after, admission. The rest are grouped as slight. The division into these two groups has been based exclusively on the objective condition of the patients, regardless of the sort and amount of hypnotic ingested and the time which had elapsed from the moment it had been taken and the time of the patient's admission.

Nikethamide Series

For the first 61 patients (45 women and 16 men) nikethamide was used (table I). Of these 27 died, giving a mortality of 44%. In "severe cases" the mortality was 63%. All but 1 of the 27 died within forty-nine hours of admission, 4 of them within the first six hours. (Of these 4, 3 were moribund on admission.) The remaining patient died seventy-four hours after admission. No patient survived who was unconscious for more than nine hours after admission.

The *course* was highly variable. One patient was awake on admission, but, in spite of vigorous stimulation, increasing somnolence and finally coma developed, and death followed thirty-nine hours after admission. In 9 cases the patient woke up after stimulation for some time and remained at least partially conscious for as long as thirty-six hours; after which, despite continuous stimulation, became unconscious again and died. In 7 cases circulatory shock developed, manifested by a weak, rapid pulse, pallor, cyanosis, decreasing blood-pressure, and increasing hæmoglobin percentage. In most cases it did not develop until the patients were deeply comatose and their clinical condition very critical; in a few, however, it developed so rapidly that the patients succumbed before any anti-shock treatment could be instituted. All the patients who had shock died, even where blood-transfusion was undertaken.

Side-effects of nikethamide were seen in 76% and were often very embarrassing (table II). Signs of irritation of motor-nerve centres (tremor, quivering, muscular rigidity, and trismus), which occurred in 16 of the 43 severe cases, sometimes necessitated withdrawal or reduction of dosage, and this also proved necessary in 2 cases where convulsions developed. Vomiting, which was found in 18 (42%) of the 43 unconscious patients, sometimes persisted for a long time and must be regarded as a very serious side-effect, mainly because the danger of aspiration into the lungs is considerably increased, but also because carbon may be lost from the stomach; electrolytes and fluid are certainly lost. Sneezing, which occurred in 24 of the severe cases, sometimes persisted incessantly for several days. Psychic excitation and motor unrest may be caused by the barbiturates alone and are not necessarily due to nikethamide.

These poor results, which we were inclined to attribute, at least partially, to nikethamide, made us replace this drug by amphetamine.

Amphetamine Series

For the subsequent 132 patients amphetamine was used instead of nikethamide (table I). Of these 12 died, giving a mortality of 9%. In "severe" cases the mortality was 21%. In 9 cases death took place within forty-nine hours of admission; of these patients, 2 were moribund on admission and died within six hours. The remaining 3 deaths occurred sixty-five, seventy, and a hundred and ten hours after admission.

Of the surviving patients, 4 woke up after more than seventy-two hours' unconsciousness, 1 of them after eighty-four hours: 6 were unconscious for forty-eight to seventy-two hours, 5 for twenty-four to forty-eight hours, 15 for six to twenty-four hours, and the remaining 28 for less than six hours.

The *course* of the individual cases changed completely when we began to use amphetamine instead of nikethamide. In contrast to what was seen with the nikethamide treatment, none of the patients who were conscious on admission became worse and died, and when coma subsided we could be confident that the patient was recovering. Even the severe cases with protracted coma did not present so many threatening symptoms as did the cases in which nikethamide was used, and when serious complications, such as shock, supervened these could be successfully treated. Fewer and less dangerous side-effects occurred, and in no case was it necessary to interrupt the treatment because of side-effects.

Case 1.—A woman, aged 34, was admitted four hours after having taken allyl-isopropyl-barbituric acid 5 g. and diethyl-barbituric acid 5 g. in solution. She was deeply comatose, cyanotic, and without reaction to pain; tendon and corneal reflexes were absent. After eighty-four hours' treatment with amphetamine (total dose 4850 mg.) she woke up and had no discomfort attributable to the therapy. Her highest blood-pressure during treatment was 155/115 mm. Hg.

TABLE I—DISTRIBUTION OF INTOXICATIONS ACCORDING TO POISONS INGESTED AND SEVERITY OF CASES. (SEE TEXT ABOUT THE DIFFERENCE OF "SEVERE" CASES IN THE TWO SERIES.)

Poison	Nikethamide			Amphetamine		
	No. of cases	Type of case		No. of cases	Type of Case	
		Slight	Severe		Slight	Severe
Allyl-isopropyl barbiturate	24 (40%)	4	20 (83%)	58 (44%)	29	29 (50%)
Phenyl-ethyl barbiturate	6 (10%)	3	3 (50%)	26 (20%)	17	9 (33%)
Other barbiturates	19 (30%)	6	13 (68%)	33 (25%)	17	16 (48%)
Unknown hypnotics	12 (20%)	5	7 (58%)	15 (11%)	11	4 (27%)
Total ..	61	18	43 (70%)	132	74	58 (44%)

TABLE II—SIDE-EFFECTS

Side-effect	No. of cases	
	Nikethamide	Amphetamine
Sneezing	26 (43%)	0
Vomiting	21 (34%)	15 (11%)
Cough	12 (20%)	0
Tremor, rigidity	16 (26%)	3 (2%)
Convulsions	2 (3%)	0
Unrest, excitation	8 (13%)	6 (5%)
Headache	7 (11%)	10 (8%)
Dizziness	2 (3%)	4 (3%)
Confusion, euphoria ..	0	6 (5%)
Hallucinations	0	2 (2%)
Extrasystoles	0	1 (1%)
Diplopia	0	2 (2%)
Total	41 (67%)	37 (28%)

TABLE III—FIFTY-FOUR SEVERE CASES IN AMPHETAMINE SERIES DISTRIBUTED ACCORDING TO HIGHEST BLOOD-PRESSURE, COMPARED WITH AVERAGE DOSE OF AMPHETAMINE IN CORRESPONDING GROUPS. FIGURES IN PARENTHESES SHOW SMALLEST AND LARGEST DOSES GIVEN IN RESPECTIVE GROUPS

Highest systolic blood-pressure (mm. Hg)	No. of cases	Dose of amphetamine (mg.) average, min. and max.
100–150	22	1026 (50–4000)
150–175	20	1906 (75–4850)
175–200	9	1343 (100–2825)
200–250	3	1762 (1340–2075)

Case 2.—A woman, aged 35, was admitted after having taken an unknown amount of some soporific at an unknown time. She was deeply comatose and did not respond to pain. She was cold and sweating, with imperceptible pulse and unmeasurable blood-pressure. After treatment with amphetamine for twenty hours (total dose 1075 mg.) she woke up and had no discomfort attributable to the therapy.

As a curiosity it may be mentioned that a pregnant woman at full term, who was admitted with severe poisoning with allyl-isopropyl-barbituric acid, was delivered of a completely normal child during the treatment. She did not wake up until four hours after the delivery. By that time she had been treated with amphetamine for thirty-two hours (total dose 1525 mg.) and owing to circulatory shock she had received a blood-transfusion.

Side-effects (table II) were seen in 28% of the patients treated with amphetamine, but in all cases they were slight and only transitory. Thus, vomiting occurred in only 7% of the severe cases as compared with 42% in the nikethamide series, and most of the patients vomited only once. As is indicated in table II, side-effects were much less frequent than in the nikethamide series.

In 13 patients electrocardiography was done after the treatment—in 9 within the first twenty-four hours after treatment had been discontinued. The electrocardiograms in 11 cases, including that of a patient who had received 4850 mg. of amphetamine, were normal. One patient had low T_1 and T_2 and inverted T_3 waves, though the electrocardiogram had been normal two years previously. This patient, aged 45, was a chronic addict to alcohol and had had delirium tremens twice during the past two years, and it is unlikely that the changes were due to the amphetamine. The remaining patient was known to have heart-disease with bundle-branch block, and the electrocardiogram was unchanged after the amphetamine treatment.

The effect of amphetamine on the blood-pressure is difficult to assess, because the blood-pressure is also affected by several other factors in the treatment. If, arbitrarily, it is assumed that rises of the systolic blood-pressure above 150 mm. Hg are produced by amphetamine, more than half of the severe cases had a rise in the blood-pressure of this kind (table III). Table III also shows that there is no definite relation between the dose of amphetamine and the greatest height of blood-pressure reached.

The blood-pressure remained high for one or two hours and then fell spontaneously to more moderate levels. In no case was it thought necessary to withdraw amphetamine because of raised blood-pressure. In 2 cases amphetamine 100 mg. per hour was given for three and twelve hours without any change in blood-pressure. In 1 of them extrasystoles and slight tremor were observed, but these symptoms subsided as soon as the dose was reduced to the usual 50 mg. per hour; the other patient had no discomfort whatever from the treatment. The patient with bundle-branch block had for several years had a blood-pressure of about 220/150 mm. Hg. He was aged 60, and in four hours he received 250 mg. of amphetamine. During the treatment the blood-pressure fell from 220/150 to 170/105.

The figures for slight cases of poisoning do not allow any definite conclusions about changes of blood-pressure, but they point in the same direction as those mentioned above.

It thus seems that the effect of amphetamine on the blood-pressure does not restrict its use in the treatment of acute barbiturate poisoning. Pre-existing hypertension is no contra-indication.

DISCUSSION

In the two series the age-distribution is uniform and the information obtained about the type and amounts of the hypnotics and the time of their ingestion does not differ materially. In the amphetamine series only 44% of the intoxications were "severe" cases, compared with 70% in the nikethamide series; but, according to the definition, assessment of severity depends on the efficacy of the therapy, and it is highly probable that this difference between the two series is due to the pronounced "exciting" effect of amphetamine. In the nikethamide series several patients who were awake became unconscious during the treatment, and according to the definition they were then placed under the heading "severe cases," whereas this happened in only 1 case among those treated with amphetamine.

As previously stated, apart from the stimulant used the treatment was essentially the same in the two series. The change from sulphonamides to penicillin cannot have altered the mortality, since none of the patients had massive or extensive pneumonia, and in only 1 case can bronchopneumonia (found at necropsy) be interpreted as the cause of death.

Blood-transfusion was given in 33% of the severe cases in the amphetamine series, compared with 16% in the nikethamide series. The indications for transfusion were the same throughout the entire period. The difference must therefore be taken as an expression of the greater efficacy of amphetamine therapy, because the frequency of the presence of these indications will increase with the time of survival of severely poisoned patients. It has already been mentioned that the patients treated with nikethamide were more often in a more critical condition than those treated with amphetamine when the shock appeared. In the nikethamide series all 7 patients who were given blood-transfusions died, whereas in the amphetamine series 12 survived out of the 19 thus treated.

In both series moderate deviations from normal of the serum-chloride, serum bicarbonate, and blood-urea levels were seen in patients who were unconscious for long periods, but these deviations could be compensated by the daily administration of fluid without special measures being taken.

The temperature was alike in the two series. It was high in most severe cases and showed a tendency to increase with the duration of the coma. Antipyretics were of no avail, whereas direct cooling was often of use in reducing the temperature.

The neostigmine treatment cannot be said to have abolished the paralysing effect of the barbiturates on the intestines, but in several cases, even in deeply comatose patients, a rapid action of neostigmine was seen, as shown by rectal evacuation of carbon about an hour after the first injection of the drug. The effect seems to have been best in the nikethamide series; presumably because amphetamine to some extent inhibits peristalsis.

There seems to be no reason for questioning the uniformity and comparability of the two series, and the improved results obtained by the change from nikethamide to amphetamine—a decrease of the mortality figure from 44% to 9%—must therefore be considered significant.

The antagonism of amphetamine to the barbiturates has previously been described. Alles (1933) showed that amphetamine sulphate had a considerable stimulating effect on animals in barbiturate anæsthesia. Reifenstein and Davidoff (1938) showed that the depth and duration of 'Sodium amytal' narcosis in schizophrenics decreased considerably after the intravenous injection of amphetamine. While the patients were under the influence of amphetamine the blood-pressure was raised, and the pulse-rate either remained unchanged or decreased a little. On awakening, such patients might be somewhat euphoric or depressed and restless, might quiver a little, or complain of headache. All these side-effects were, however, only of short duration. Myerson et al. (1939) also used schizophrenics as experimental subjects. With sodium amytal a deep reactionless sleep was induced; from this they could be awakened with amphetamine in ten to twenty minutes. If amphetamine was given with the sodium amytal, or before it, the soporific action of the latter was abolished. The patients invariably showed a slower pulse-rate and a raised blood-pressure while they were under the influence of amphetamine, but no relation could be demonstrated between the rise of blood-pressure and the stimulating effect. In experiments on animals Lumière and Meyer (1938) found that the stimulating effect of amphetamine was greater than that of strychnine, and Chakravarti (1939), who investigated the stimulating effect of amphetamine, leptazol, nikethamide, ephedrine, picrotoxin, and strychnine on animals, found that, in proportion to their toxicity, amphetamine had the most powerful effect, nikethamide the weakest, and leptazol one between these two extremes.

The pharmacology of amphetamine was described in some detail by Myerson (1940):

Sympathomimetic Effects

(1) It dilates the pupils, widens the palpebral apertures, increases the intra-ocular tension, and diminishes the power of accommodation.

(2) It relaxes the non-striated muscles of the gastro-intestinal tract, weakens peristalsis, dilates the renal calyces and pelves and the bladder, and enlarges the kidneys.

(3) It causes a rise of the blood-pressure for one or two hours and tends to slow the pulse-rate, but no cardiac changes can be demonstrated.

(4) It reduces the secretion of saliva and sweat.

Stimulation of Central Nervous System

Subcutaneous or intravenous amphetamine 20–30 mg. counteracts the hypnotic action of the barbiturates.

The only clinical study on amphetamine treatment of barbiturate poisoning was published by Freireich and Landsberg (1946). They treated 14 cases of moderate and severe barbiturate poisoning with amphetamine, and only 1 died.

In the few patients of our amphetamine series who died in spite of the treatment, necropsy did not reveal any damage to organs which could be attributed to amphetamine, and in a careful study of the literature I have been unable to find any description of such damage. On the other hand, numerous reports have been published of cerebral damage following the administration of nikethamide and leptazol, the actions of which are similar because they may cause convulsions. The cerebral changes are ganglion-cell degeneration, small hæmorrhages, and lymphocytic infiltrations. Such changes have been described in man by Hassin (1939), Roback and Miller (1940), and Weil and Liebert (1940). Similar changes have been demonstrated in animals which had been given large doses of leptazol (Cleckley et al. 1940, Finley and Brenner 1941, Liebert and Weil 1939, Nyberg 1938, Strecker et al. 1939), even if the convulsions were prevented by ether anæsthesia. In barbiturate poisoning in man Smith and Wanscher (1942) found the same cerebral changes both after treatment with leptazol and with nikethamide, but the assessment of these findings is made difficult by the fact that barbiturates alone may produce similar changes (Hassin 1939).

On the whole the clinical results of the present study agree well with those of previous experiments.

SUMMARY

61 patients with acute barbiturate poisoning were treated with nikethamide 2–5 g. per hour, and 132 patients were treated with amphetamine, generally 50 mg. per hour.

Apart from this, the two series were treated similarly—i.e., by aspiration of the stomach and instillation of medical carbon, stimulation of peristalsis with neostigmine, prophylactic treatment against pneumonia, the administration of parenteral fluid and anti-shock treatment. The two last-mentioned therapeutic measures were taken when judged necessary according to certain examinations mentioned which were carried out at brief intervals.

Of the 61 patients in the nikethamide series 27 (44%) died; the mortality for the 43 "severe" cases was 63%. Of the 132 patients in the amphetamine series 12 (9%) died; the mortality for the 58 "severe" cases was 21%. In the cases treated with amphetamine the course was less eventful, and the condition of the patients far better, than in those treated with nikethamide. Untoward effects were fewer and of little practical importance. This applies also to the rather common rise of blood-pressure.

Hence it must be said that in the treatment of acute barbiturate poisoning amphetamine is far more effective than nikethamide.

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THE RATE OF RED-CELL EXCHANGE IN REPLACEMENT TRANSFUSIONS

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REPLACEMENT transfusion, as a form of treatment for hæmolytic disease of the newborn, has been widely practised during the past two or three years. Broadly speaking, the object of this form of treatment is to remove as much as possible of the infant's blood and to replace it by Rh-negative blood. However, if this objective is analysed, it will be found that it makes a great deal of difference whether it is whole blood or red cells only that are to be exchanged. If it is whole blood, an equally large exchange transfusion will have to be carried out whether or not the infant is anæmic; but if the object is to remove as great a proportion as possible of the infant's red cells, it is evident that the more anæmic the infant is the smaller will the exchange transfusion need to be. Similarly, if another object of exchange transfusion is to supply the infant with a

certain bulk of Rh-negative cells rather than with a certain volume of Rh-negative blood, this objective will be more easily attained by transfusing a concentrated suspension of erythrocytes rather than whole blood.

Mollison and Cutbush (1948) demonstrated that these considerations were of practical importance. They published details of one case in which they had measured the rate of red-cell exchange using a differential agglutination method. After the exchange of some 240 ml. of blood almost 90% of the red cells in the infant's circulation were Rh-negative. They pointed out that, according to some published formulæ for exchange transfusion—e.g., of Wiener and Wexler (1946)—this degree of "exchange" should have been achieved only after replacing some 500 ml. of blood. They also pointed out that the result was due to two separate factors: the initial anæmia of the infant, and the high red-cell count of the donor blood. In another case they observed that, although at the end of an exchange transfusion some 90% of the cells were Rh-negative, the total red-cell count was only about 3,000,000 per c.mm. Thus, although a satisfactory exchange of red cells had been made, the infant soon had to be given another transfusion. The last case illustrates well the shortcomings of describing the results of replacement transfusion in terms of "percentage exchange." It seems desirable to analyse more precisely the effects of replacement transfusion and to provide data from which the results in a given case can be predicted.

THEORETICAL CONSIDERATIONS

Wallerstein (1946) cited the results of calculations on the efficiency of exchange transfusions for two individual cases. Wiener and Wexler (1946) presented a more general formula, applicable in cases where the method of continuous transfusion and withdrawal was used. Subsequently Wallerstein and Brodie (1948) made a detailed theoretical study of various methods of making exchange transfusions, in which they considered both the continuous and intermittent techniques and, in addition, some variations of these methods.

Experiments in vitro, such as those reported by Wallerstein (1946) and Farquhar and Lewis (1949), are of little value, in that they only illustrate results already obtainable by mathematical calculations. Such calculations as those of Wallerstein and Brodie (1948) have proved useful in assessing the comparative value of different techniques but do not provide a very good basis for quantitative predictions, if the object of the exchange transfusion is to exchange red cells rather than blood.

The mathematical analyses and experiments in vitro of previous workers are only valid on the assumption that one homogeneous fluid is being replaced by a similar homogeneous fluid in a vessel of constant volume. Even in the apparently simple case where the hæmatocrit of the donor's blood is the same as that of the infant's blood it is impossible to apply these simple formulæ to red-cell exchange without appreciable errors, because the red cells are not uniformly distributed throughout the vascular system.

To derive an expression applicable to the exchange of red cells it is necessary to introduce a quantity k, which is the value of the ratio of the "whole-body hæmatocrit" of the infant to the venous hæmatocrit. This constant has a value of about 0·87 and does not depend on the level of venous hæmatocrit (Mollison et al. 1950).

Only the method of "intermittent substitution with equal volume replacement" is considered here—i.e., withdrawal of v ml. of blood from the infant, followed by injection of v ml. of blood into the infant, &c. Now in such a case, if the blood volume of the infant (assumed to be constant during the exchange transfusion) is V ml., v ml. is removed and replaced at each operation, H_o is the initial venous hæmatocrit of the infant's blood, D is the hæmatocrit of the donor's blood, and k is the constant referred to above, it can be shown that after n operations the fraction of the infant's original cells remaining is given by the formula

$$\frac{H_n^+}{H_o} = \left(1 - \frac{v}{kV}\right)^n \quad . \quad . \quad . \quad (1)$$

where H_n^+ is the venous hæmatocrit of Rh-positive cells after n operations.

The total venous hæmatocrit after n operations is given by:

$$H_n = H_o\left(1 - \frac{v}{kV}\right)^n + D\left(1 - \left(1 - \frac{v}{kV}\right)^n\right) \quad . \quad (2)$$

The first term in equation 2 represents the residual Rh-positive red cells, and the second term the Rh-negative donor cells. Consequently the ratio of infant's original red cells to total red cells is given by:

$$F = \frac{H_o\,\alpha^n}{H_o\,\alpha^n + D(1 - \alpha^n)} \quad \text{where } \alpha = \left(1 - \frac{v}{kV}\right) . \quad (3)$$

It is a simple matter to modify equation 1 to make it applicable to various other techniques, but the case of "intermittent substitution with equal volume replacements" has been selected as being the most suitable for checking experimentally. Moreover, this technique is widely used.

METHODS

To test the assumptions made in deriving the above formula, studies were made of the efficiency of red-cell exchange by studying the changes in concentration of red cells labelled with radioactive phosphorus (P^{32}). The donor blood used was freshly drawn and heparinised. In one case the hæmatocrit of the donor blood was raised artificially by centrifuging the blood and then removing some of the supernatant plasma. A small sample was taken from the donor bottle for the preparation of a radioactive cell suspension, and this was used for the determination of the infant's circulating red-cell volume immediately before the beginning of the replacement transfusion. At the same time the plasma volume was determined by Evans blue (T–1824) dye method. A full description of these methods has been published elsewhere (Mollison et al. 1950).

Throughout this paper, unless otherwise stated, "hæmatocrit" means the true proportion of red cells in unit volume of blood. Following Barnes et al. (1948) we take the true venous red-cell hæmatocrit to be the

TABLE I—COMPARISON BETWEEN THE OBSERVED AND CALCULATED VALUES OF THE FINAL HÆMATOCRIT (H_n) IN THREE CASES

Case no.	Original venous hæmatocrit* (H_o)	Red-cell volume (ml.)	Plasma volume (ml.)	Blood volume (ml.) (V)	Whole-body hæmatocrit (W_o)	Hæmatocrit ratio (k)	$\alpha\left(1-\frac{v}{kV}\right)$	No. of operations (n)	α^n	Donor hæmatocrit* (D)	Final hæmatocrit calculated (H_n)	Final hæmatocrit observed (H_n)	Final blood volume (ml.) (V_n)	Increase in blood volume (%)
1	43·3	87	158	250	34·9	0·805	0·900	15	0·206	56·1	53·3	49·6	286	14·0
2	41·0	65	116	185	35·2	0·859	0·874	13	0·160	65·3	60·4	59·5	218	12·5
3	37·0	71	129	204	34·8	0·941	0·896	18	0·139	42·8	41·9	38·7	238	16·5

* All hæmatocrit values have been corrected for trapped plasma. V = 20 ml.

observed venous red-cell hæmatocrit × 0·95, on the assumption that 5% of the column consists of trapped plasma. The conditions of centrifugation are given in the paper referred to above.

The replacement transfusion was made in accordance with the technique described by Mollison and Cutbush (1948), a 20 ml. syringe being used. Care was taken to prevent sedimentation in the bottle of donor blood and to measure as accurately as possible the volumes withdrawn and replaced. Samples of the discarded blood were taken at known intervals and measured for radioactivity. After an arbitrary number of operations the circulating red-cell and plasma volumes were redetermined with further injections of radioactive red cells and Evans blue, the samples obtained being corrected for any residual radioactivity and dye left from the previous determinations.

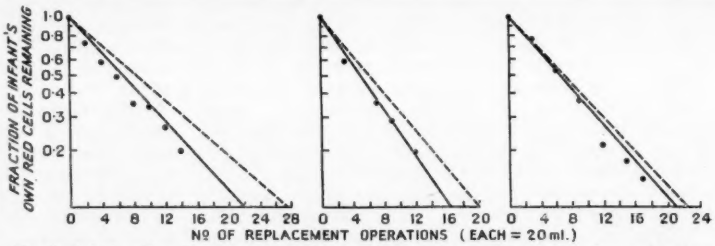

Fig. 1—Relationship of number of replacement operations, each of 20 ml., to fraction of infant's own red cells remaining in three cases: solid lines show theoretical values calculated from equation 1 (see text); interrupted lines show theoretical values calculated from equation of Wallerstein and Brodie (1948) in which k is not taken into account; and observed values based on radioactivity measurements are shown as plotting-points.

In two cases the proportion of infant's red cells remaining in the circulation was also deduced from estimations made by the technique of differential agglutination, as follows:

The red-cell count of the donor blood was estimated by counting about 2000 cells; mean corpuscular volume (M.C.V.) was determined in the conventional manner from red-cell count and venous hæmatocrit. The infant's initial red-cell count and M.C.V. were determined in the same way from a venous blood sample. The proportion of infant's red cells remaining in the blood after n operations was determined by subtracting estimates of donor red-cell count from estimates of total red-cell count, the number of donor cells being determined by the technique of differential agglutination. The proportion of infant's red cells in the blood after a given number of operations may be expressed either in terms of relative number of red cells or in terms of relative volume of red cells. Since the red cells of a newborn infant are much larger than those of an adult, it makes a considerable difference whether one speaks of number or of volume. To obtain figures which could be compared with the P^{32} measurements the counts of donor's red cells and of infant's red cells (obtained by subtracting the count of donor's red cells from the total red-cell count) were multiplied by observed M.C.V. to obtain their approximate proportion by volume.

RESULTS

The results obtained in three cases studied are shown in table I. The blood volume V is obtained by taking the sum of the measured red-cell and plasma volumes and adding 2% to allow for the white cells. The whole-body hæmatocrit, W_o, is obtained by dividing the observed red-cell volume by the blood volume V. The factor k is derived from the whole-body hæmatocrit and the initial venous hæmatocrit. The number of complete operations—i.e., 20 ml. withdrawal followed by equal volume replacement—and the hæmatocrit of the donor blood are given in the table.

It is thus possible to substitute numerical values for all the constants in equation 2, and to calculate the venous hæmatocrit after a given number of operations. Calculated values are given in the table and can be compared with the observed values given. It will be seen that the observed values are all lower than expected. However, it will also be noted from the figures for the final blood volume and for the increase in blood volume that, although the theoretical expression was derived on the assumption that the total blood volume would remain constant, there was, in each case, an increase in blood volume, although no extra blood had been added.

By substituting numerical values in equation 1 it is possible to calculate the fraction of the infant's own red cells remaining at any stage. The solid line in fig. 1 shows the theoretical values calculated from equation 1. The interrupted line is derived from the equivalent equation given by Wallerstein and Brodie (1948), which differs in that the constant k is not taken into account. The experimental points are based on the radioactivity measurements. Strictly speaking, the experimental points refer to the hæmatocrit of the infant's cells H_n^+ after n operations, and any change in blood volume necessitates a corresponding correction in these values if they are to reflect accurately the changes in the volume of Rh-positive cells remaining.

In table II some of the experimental readings shown in fig. 1 have been used to calculate the hæmatocrit of Rh-positive cells remaining after a given number of operations. From this figure and the observed hæmatocrit, one obtains the ratio of the infant's cells to total red cells. The corresponding calculated figure obtained by substituting numerical values in equation 3 is also shown. It will be noted that there is very good agreement between the observed and the theoretical figures. As an additional experimental check the values obtained by differential agglutination measurements (see above) are also given. These values are obtained by difference—i.e., total red-cell volume *minus* total volume of donor cells—and are consequently subject to considerably greater error than the P^{32} measurements, which estimate the infant's red-cell volume directly. Moreover, estimates of red-cell count have had to be converted into estimates of red-cell volume for comparison with P^{32} measurements.

TABLE II—COMPARISON BETWEEN THE OBSERVED AND CALCULATED VALUES OF THE FRACTION OF INFANT'S RED CELLS REMAINING AFTER EXCHANGE TRANSFUSION. THE VALUES ARE EXPRESSED FIRSTLY AS A FRACTION OF THE INITIAL RED-CELL VOLUME AND SECONDLY AS A FRACTION OF THE FINAL RED-CELL VOLUME

Case no.	No. of operations (n)	Proportion of infant's cells remaining		Observed hæmatocrit of infant's cells only (H_n^+)	Total hæmatocrit observed (H_n)	Ratio: Infant's red cells / Total red cells		
		Theoretical	Observed			Observed (P^{32})	Observed (Ashby)	Calculated (equation 2)
1	14	0·227	0·195	8·4	48·1	0·17	0·22	0·162
2	12	0·187	0·193	7·9	57·6	0·14	—	0·130
3	3	0·157	0·137	27·0	38·5	0·70	0·61	0·693
3	9	0·375	0·354	13·3	38·3	0·35	0·33	0·332
3	17	0·720	0·731	5·8	38·7	0·15	0·09	0·136

DISCUSSION OF EXPERIMENTAL RESULTS

It has been shown that equation 3 predicts with a fair degree of accuracy the ratio of the infant's residual cells to total red-cell volume at any stage of the exchange. This figure, being a ratio, is not directly affected by changes in the total blood volume. The calculated figures for the fraction of the infant's cells remaining and for the final hæmatocrit do not agree so well with

the observed figures, and it seems that the most likely cause of the discrepancy is the change in blood volume during exchange transfusion. On the other hand, if the observed figures for total hæmatocrit and hæmatocrit of residual blood are corrected to allow for the observed increase in blood volume they exceed the expected values.

Although the observed increases in blood volume were similar in the three cases, these estimates are subject to considerable error. Each blood-volume estimate entails the separate estimate of red-cell volume and plasma volume, and the observed difference between two such estimates may carry an accumulated error. On theoretical grounds blood volume is expected to increase to a small extent as venous hæmatocrit increases (Mollison et al. 1950). This change in blood volume may be regarded as "permanent." The present estimates suggest that there may be in addition a temporary increase in blood volume after replacement transfusion. Possibly, if the estimates of blood volume had been repeated at a longer interval after replacement transfusion, better agreement between the estimates would have been found. However, even if the observed increase in blood volume is both significant and permanent, the theoretical predictions, based on the assumption that the blood volume remains constant, still agree with experimental observations to within a small percentage and are certainly adequate for practical applications.

The fact that the blood flowing in the larger vessels contains a higher proportion of red cells than the average has an appreciable effect, as is shown by the difference between the solid and the interrupted lines in fig. 1. This leads to a more rapid removal of the infant's red cells than would otherwise be the case, but, on the other hand, it also means that the removal of plasma is correspondingly less efficient. Thus, by similar reasoning to that used for the formulæ for red cells, the proportion of the infant's original plasma to total plasma (F_i) after n operations can be shown to be:

$$F_i(\text{plasma}) = \frac{\left(1 - H_o\right)\left(1 - \frac{v}{xV}\right)^n}{\left(1-H_o\right)\left(1-\frac{v}{xV}\right)^n + \left(1-D\right)1-\left(1-\frac{v}{xV}\right)^n} \quad . \quad (4)$$

where the constant $x = \frac{1 - W_o}{1 - H_o}$, W_o being the initial whole-body hæmatocrit. This constant, unlike k, is greater than unity; hence the lower efficiency of plasma exchange compared with that of red cells.

PRACTICAL APPLICATIONS

Before we consider the practical application of the formulæ given above, it is necessary to define the objective of the exchange transfusion in quantitative terms. After a consideration of the therapeutic requirements and the practical limitations, Wallerstein and Brodie (1948) concluded that it was desirable to proceed with an exchange transfusion until 90% of the infant's blood had been exchanged. However, they were considering the exchange only in terms of whole blood and, as we have shown, this is a different matter from considering the exchange of red cells alone. Now it is generally accepted that the object of the exchange is to reduce the hæmatocrit of Rh-positive cells to a low level while providing sufficient Rh-negative cells to prevent anæmia. Consequently it is suggested that for practical purposes the objectives of the exchange transfusion should be twofold:

(1) the reduction of Rh-positive cells to a level corresponding to a venous hæmatocrit of 5%;
(2) the addition of sufficient Rh-negative cells to bring the total venous hæmatocrit up to not less than 50%.

Stating Wallerstein and Brodie's criterion in this form makes it possible to take into account two important variable factors which would otherwise be neglected: the hæmatocrit of the infant's original blood, and that of the donor blood.

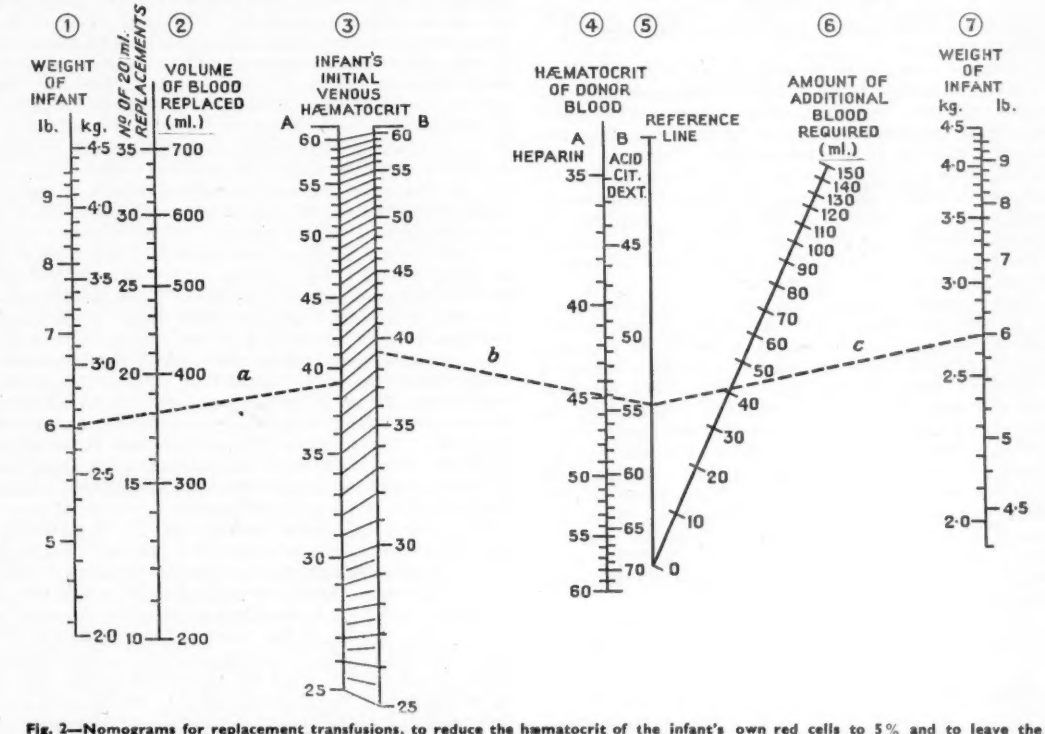

Fig. 2—Nomograms for replacement transfusions, to reduce the hæmatocrit of the infant's own red cells to 5% and to leave the infant with a final hæmatocrit of 50%. Note that by using a concentrated red-cell suspension, the injection of additional blood at the end of the exchange procedure is rendered unnecessary.

With the aid of the formulæ given in equations 1 and 2 it is possible to decide in advance the steps required to achieve a satisfactory exchange of red cells as defined above, provided that the necessary numerical values can be substituted in the formulæ.

It is certainly impracticable to determine the blood volume (V) for each case before starting the transfusion. However, provided that the infant is not in cardiac failure, it seems to be sufficiently accurate for this purpose to assume a blood volume equivalent to 80 ml. per kg. of body-weight (see Mollison et al. 1950).

The volume of blood (v) replaced at each operation is assumed to be 20 ml. in all cases.

The value of k is taken as 0·87 for all cases, again on the basis of observations on normal and diseased infants made by Mollison et al. (1950).

Thus for each individual case it is necessary to measure only the infant's hæmatocrit and body-weight and the hæmatocrit of the donor blood. In practice it would be inconvenient to have to make the necessary calculations arithmetically before starting the exchange, and to avoid this inconvenience nomograms (fig. 2) have been prepared.

Before describing the use of the nomograms, some of the principles which emerge from their use may be outlined. When the infant is anæmic and small, the exchange of a relatively small amount of blood will reduce the hæmatocrit of Rh-positive cells to 5%. However, if only a small exchange transfusion is given, the concentration of Rh-negative cells in the infant's circulation will not have increased sufficiently by the end of transfusion, unless a very concentrated suspension of Rh-negative cells has been used. In such a case the concentration of Rh-negative cells can be further increased by two methods—either by continuing the exchange transfusion, or by injecting Rh-negative blood into the infant without further withdrawal, an operation conveniently described as "topping-up."

USE OF NOMOGRAMS

The use of the nomograms is best illustrated by a concrete example.

The infant's weight, in the present case 6 lb. (2·72 kg.), is marked on scale 1 in fig. 2, and its hæmatocrit, in the present case 39%, on scale 3A. For convenience the scales are marked for observed red-cell hæmatocrit—i.e., they are not corrected by the factor 0·95. The two marks are joined by a straight line (a in fig. 2) whose point of intersection with scale 2 gives the number of exchange operations and volume of donor blood required to reduce the hæmatocrit of Rh-positive cells to 5%. Thus, in the present case, 18 operations, involving the use of 360 ml. of donor blood, are required.

The uncorrected value of the infant's original hæmatocrit is next marked on scale 3B, and the uncorrected donor hæmatocrit on scale 4. Two scales for the hæmatocrit of the donor blood are marked on scale 4: scale A to be used when freshly drawn heparinised blood is used, and scale B to be used when the donor blood has been drawn into an acid-citrate-dextrose preservative solution. Under the latter conditions the cells undergo immediate swelling but revert to their original size within 24 hours of transfusion. The extent of this swelling varies considerably in different solutions and even between different blood samples taken into the same preservative solution. The solution which is in general use in Britain at present has the following composition:

2% disodium citrate (monohydric) ..	100 ml.
15% dextrose	20 ml.

to be mixed with 420 ml. of blood.

For convenience, we refer to this solution as "acid-citrate-dextrose." We have found that, when blood is taken into this particular solution, the cells swell by 15% to 25%. It has been considered sufficient for the present purpose to assume an average value of 20%. This swelling is maximal within an hour of mixing the blood with the preservative solution and does not change appreciably during normal periods of storage. To avoid the need for calculating the true hæmatocrit value of donor blood taken into acid-citrate-dextrose, the observed value can be marked on scale 4B. In the present example it is assumed that the donor's blood has been freshly drawn into a small amount of heparin-saline, and the observed hæmatocrit, 45%, is therefore marked on scale 4A. A straight line (b in fig. 2) joining these two points is continued till it intersects the reference line (5). This point of intersection is next joined to the point on scale 7 corresponding to the infant's weight by a line (c in fig. 2) which cuts the slanting scale 6 to give the volume of additional blood (about 40 ml. in the present case) to be given at the end of the replacement transfusion to bring the hæmatocrit of Rh-negative cells to 45%.

If line b cuts the reference line 5 below the point 0, no extra blood will have to be injected into the infant at the end of the replacement transfusion. Evidently, if donor blood with a hæmatocrit of, say, 60%—i.e., 72% in acid-citrate-dextrose—were used as a routine it would very rarely be necessary to inject any additional blood. On the other hand, if ordinary citrated blood, as supplied by blood-supply depots, is used, it will always be necessary to inject additional blood at the end of the transfusion if the infant's hæmatocrit is to be raised to 50%, since citrated blood usually has a hæmatocrit of 32–36% (true) or 38–43% (observed).

From one point of view there is much to be said for using, as a routine, blood whose hæmatocrit has been raised to 60% (72% in acid-citrate-dextrose) by the removal of supernatant plasma. This makes it unnecessary to inject additional blood at the end of the transfusion. However, the preparation of a suspension of packed cells with a hæmatocrit of 60% is not always possible; for instance, the bottle of stored blood may not have settled adequately. Moreover, even if it is possible to prepare a bottle with such a high hæmatocrit, it will reduce the volume of cell suspension available from a single bottle of blood to, say, 320 ml. The exchange of such a small volume will often be insufficient to reduce the hæmatocrit of the infant's own cells to 5%. In such cases it becomes of interest to know whether the use of, say, 400 ml. of a cell suspension with a hæmatocrit of 45% could achieve the defined objects of replacement transfusion; such a suspension could often be prepared from a single bottle of stored blood.

In the present example it was shown that for an infant weighing 6 lb. (2·72 kg.) with an initial venous hæmatocrit of 39% the exchange of 360 ml. of blood would suffice for the attainment of the first objective—i.e., the reduction of the hæmatocrit of Rh-positive cells to 5%. The present example also shows that if the heparinised donor blood had a hæmatocrit of 45%, about 40 ml. would have to be injected at the end of the exchange transfusion without withdrawing any further blood from the infant, if the infant's hæmatocrit was to be raised to 50%. In this example, therefore, the intelligent use of a single bottle of stored blood would suffice to achieve the objects of exchange transfusion.

When the infant is of average size (7 lb., 3·18 kg.) and has a hæmatocrit of about 47%, the use of a single bottle of stored blood will not achieve these two objectives. The nomograms show that an exchange of 460 ml. would be required to reduce the hæmatocrit of Rh-positive cells to 5%. Now, if the bottle of stored blood were used without being "concentrated," its hæmatocrit would be about 35%, and the nomograms show that an extra 120 ml. of blood would have to be injected after the completion of the exchange transfusion. Alternatively, if the bottle of stored blood were concentrated by

removal of plasma, it would be necessary to leave 460 ml. to carry out a sufficiently large exchange. It would still be necessary to inject extra blood at the end of the exchange transfusion, since the hæmatocrit of the donor blood would have been increased to only about 40%.

If it is necessary to use more than one bottle of stored blood, it will usually be found most convenient to proceed as follows: remove 200 ml. or more of supernatant plasma from each of two bottles of stored blood; mix the remaining cell suspensions by pouring from one bottle to the other; and put about 500 ml. of the mixture into one bottle and leave about 150 ml. in the other. The cell suspension should have a hæmatocrit of about 55%.

For example, take the case of an infant weighing 9 lb. (4·08 kg.) with a hæmatocrit of 48%. The nomograms show that an exchange transfusion of 600 ml. is required and that the use of donor blood with a hæmatocrit of 53% (64% in acid-citrate-dextrose) would make unnecessary any "topping-up" at the end of the exchange transfusion.

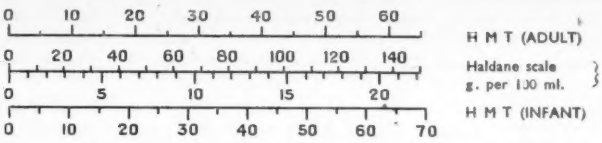

Fig. 3—Conversion of hæmoglobin values into hæmatocrit values.

RECOMMENDED PROCEDURE

In practice it usually is inconvenient to have to determine the hæmatocrit of the donor blood and of the infant before beginning the exchange transfusion. The following routine is therefore suggested:

It is assumed that the hæmoglobin concentration of the cord-blood sample will have been determined as a guide to treatment (Mollison and Cutbush 1949). Now, provided that the cord has been clamped as soon after birth as possible, it can be assumed that the hæmoglobin concentration of venous blood will be only slightly greater in samples taken from the infant after birth. Thus, if the infant's weight is known, a preliminary guess can be made of the size of exchange transfusion likely to be necessary. The decision is next made whether to prepare a concentrated suspension of erythrocytes from one bottle of stored blood or from two. In either case a mixed sample of the donor cell suspension is obtained; a sample of blood is taken from the infant at the beginning of exchange transfusion, and, while the transfusion is being given, hæmatocrits of the donor's and infant's blood samples are determined. Then after 30 minutes, and before the transfusion is completed, the necessary information will be available, and it will be possible by reference to the nomograms to decide how large the exchange transfusion must be, and whether any "topping-up" will be necessary at the end.

If there are no facilities for determining the hæmatocrit, the scales provided in fig. 3 can be used for the conversion of hæmoglobin values into their equivalent hæmatocrit values.

It will be observed that, for a given hæmoglobin concentration, infants have slightly higher hæmatocrit values than have adults—i.e., the mean corpuscular hæmoglobin concentration (M.C.H.C.) of infants is lower. Although little emphasis has been laid on this difference in published reports, our own results, in normal and diseased newborn infants, show that the M.C.H.C. of newborn infants is about 32%, compared with about 34% in adults. This difference is taken into account in fig. 3. On both hæmatocrit scales the values refer to observed red-cell hæmatocrit. The hæmoglobin scale is marked in g. per 100 ml., but is also marked in percentages for the convenience of those who use the "M.R.C. Photometer," an instrument on which 100% is equivalent to 14·8 g. per 100 ml.

SUMMARY

Previously published formulæ for the efficiency of replacement transfusion have considered the exchange of whole blood. The present paper is by contrast concerned with the exchange of red cells. It is shown that, to derive a reliable formula for this purpose, it is necessary to take into account (1) the infant's initial hæmatocrit, (2) the hæmatocrit of the donor blood, and (3) the unequal distribution of red cells and plasma in the vascular system.

Relevant formulæ are presented, whose validity has been established experimentally by the use of red cells labelled with P^{32}.

The objectives of exchange transfusion in hæmolytic disease of the newborn have been redefined in the following terms: (1) to reduce the hæmatocrit of Rh-positive cells to 5%, and (2) to add sufficient Rh-negative cells to bring the total venous hæmatocrit to 50%.

Nomograms have been prepared from which the size of replacement transfusion required to achieve the above objectives in any given case can be rapidly deduced.

We are grateful to Prof. James Young for facilities for carrying out this work in the department of Obstetrics, Hammersmith Hospital, and Prof. A. A. Moncrieff (department of Child Health) for permission to treat, and to make observations on, infants under his care.

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SIMPLE PAPILLOMATA OF THE BLADDER

A REVIEW OF 175 CONSECUTIVE PERSONAL CASES FROM ST. PAUL'S HOSPITAL, LONDON, AND ST. JOHN'S HOSPITAL, LEWISHAM

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DURING the period in which these 175 cases of simple papilloma were under observation, 85 cases of carcinoma of the bladder were recognised de novo; and 31 of the 175 thought to be simple ultimately proved to be malignant. Thus we see in what a high proportion bladder growths are, or become, malignant—about 45% in this series. Of the total of 260 cases only 55% continued to be simple. The danger that a growth may become malignant should always occupy the surgeon's mind, and impress him with the need for regular cystoscopy, particularly where the growth is solitary (tables I and II).

AGE, SEX, AND SITUATION

For practical purposes papilloma of the bladder does not occur at all before the age of about 30; the incidence increases as the years advance, to reach a maximum in the 6th and 7th decades (table III). This higher incidence among the elderly is not due to a continuation of the

TABLE I—TIME OF ONSET OF MALIGNANT CHANGE

Malignancy found	Solitary tumours	Multiple tumours	Total
At first examination	73	12	85
Within 1/2 year	3	4	7
After 1/2–1 year	2	3	5
,, 1–2 years	1	3	4
,, 2–3 ,, ...	2	2	4
,, 3–4 ,, ...	1	1	2
After over 4 ,, ...	3	6	9
Total	85	31	116

These figures demonstrate that cases originally presenting as a frank carcinoma are commonly solitary.

disease from early life; it commences with greater frequency as the years go by.

Like stone in the urinary tract and renal neoplasms, papilloma is much commoner in the male than in the female; three to one according to table III.

Although no part of the bladder is immune from the growth, it tends to appear at the base; in the early stages it is found an inch or so above the ureteric orifices on either the outer or the inner side. The next common situation is at any point of the circumference round the internal urinary meatus. And, as the advance of a long-standing papilloma goes on, the intervening areas between these localities become the seat of further spread. Hence it is not unusual to see vegetations involving any part of the area comprising the lower parts of the posterior and lateral walls, the trigone, and the internal urinary meatus. The small multiple rapidly reappearing growths which are seen so soon after existing ones have been destroyed by diathermy are widespread in their distribution.

CLINICOPATHOLOGICAL CLASSIFICATION

Because in most of these cases the growth is treated through a cystoscope, and it is almost impossible with this instrument to remove a mass of the growth which will include a portion of the adjacent bladder wall, biopsy specimens are unreliable and the cystoscopist must make his own diagnosis by inspection. The following are the features which should guide him.

Villous Papilloma
Pedunculated and long fronds.
Single or multiple.
No quick further new growth after fulguration.

Sessile Papilloma
Invariably multiple.
Quick small further growths after fulguration.
It has short fronds and sometimes occurs with a villous papilloma.

Doubtfully Malignant
Sessile papilloma with area of necrosis.

Undoubtedly Malignant
A sessile papilloma associated with a bald tumour or with bald nodules in the vicinity.
Ulceration of a sessile papilloma.
Sessile papilloma with a firm base (as indicated by probing with diathermy electrode).

Though the majority of bladder growths are not malignant, and do not become so, malignant disease is all too often found after treatment, and a careful watch by cystoscopy must therefore be kept. Of the 205 cases in which no malignancy could be recognised at the first examination, 61 (21%) ultimately showed definite signs of a malignant change.

TABLE II—INCIDENCE OF MALIGNANCY RELATED TO MULTIPLICITY OF TUMOURS

Tumours	Total no. of cases in group	No. showing malignant change
Remaining solitary	129	72
Solitary becoming multiple ..	38	14
Apparently multiple from onset ..	83	30
Total	250	116

SYMPTOMS

All papillomata tend to bleed as they get large, because necrosis takes place as a result of a diminishing blood-supply. Hæmaturia is the almost constant sign, with the outstanding feature that it is generally painless. Of the 260 cases under review, there were only 10 (3·8)% without hæmaturia, and 5 of these were malignant; moreover, the hæmaturia of vesical carcinoma is not usually painless.

When the urine is bloodstained and examined in two glasses, blood of vesical origin tends to be more concentrated in the second glass than the first. This is in contrast with blood of renal origin which is equal in both glasses. With blood of urethral or prostatic origin the first glass is darker than the second.

The higher concentration of blood in the second glass should not be confused with the terminal hæmaturia of cystitis, in which a few drops of blood are expressed at the end of micturition, and there is also increased frequency of micturition. But markedly terminal hæmaturia is sometimes seen with a papilloma when the growth is situated near the internal meatus. Persisting increased frequency of micturition usually means that malignancy has supervened; in which case dysuria is generally present as well.

TABLE III—AGE-INCIDENCE

Age	Male	Female
29	1	..
30–40	13	1
41–50	24	6
51–60	61	24
61–70	69	24
Over 70	27	10
Total ..	195	65

The onset of hæmaturia has no fixed relation to the size of the growth. Some growths attain a considerable size before the first bleeding; others are still quite small. The determining factor is probably necrosis due to poor vascularity, and this may be expected sooner in a villous growth with long fronds than in a more compact vegetation. Bleeding because of malignancy puts the case into another category.

Some patients have increased frequency of micturition; and, as they often have residual urine too, there is the obvious suggestion that the papilloma is only part of the local pathology which has also led to bladder-neck obstruction.

DIAGNOSIS

Cystoscopy makes diagnosis a simple matter. Difficulties arising from persistent bleeding can generally be overcome by irrigation throughout the examination. If at the first examination, because of bleeding, the view is too poor for a definite opinion to be formed, a short period of indwelling catheter drainage (24–48 hours), with bladder irrigation several times daily if necessary, will usually make it easier to see the growth. Where successful treatment per urethram can be hoped for, one should avoid opening the bladder to make a diagnosis.

After a good view has been obtained, the question of malignancy may still be undecided. As a rule it can be answered, at a subsequent examination, carried out two weeks or more after vigorous treatment by fulguration.

It is a mistake to assume that a growth is malignant because it is very large. A papilloma may fill the whole bladder, and prevent a cystoscopic view, and on the suprapubic approach it may be so avascular that it can literally be raked out with the fingers without causing any troublesome bleeding.

Cystoscopy done too soon after treatment can cause misgivings as to the real state of affairs. One should wait until all œdema resulting from the fulguration has fully settled. An interval of four weeks, or sometimes more, is ordinarily required.

TREATMENT

Fulguration through a cystoscope is the treatment of election for papillomata of the bladder. It is inapplicable :

1. When malignancy can be recognised.
2. When malignancy is still in doubt after preliminary fulguration.
3. When for one reason or another it is impracticable.

For routine destruction of papilloma per urethram an irrigating cystoscope is needed, and the more efficient the irrigating system the more quickly can the fulguration be carried out. (One of us has his own instrument which has been specially constructed for the purpose.) For the smaller growths up to a diameter of about $^3/_4$ in. one treatment should suffice. Much bigger growths can be completely destroyed by one treatment, but when the bladder is inspected again, a month or so later, a remnant of growth is often found, requiring further treatment. Multiple moderate-sized growths certainly require several applications. As already stated, at least a month should elapse before the patient is cystoscoped again, to allow œdema and separating slough to disappear ; and, where there is no tendency to quick reappearance of growth, three months is a more satisfactory interval between treatments.

It can be very discouraging to find repeated crops of small sessile papilloma ; but regular treatments seem in time often to reduce the rapidity of the appearance of further growths.

Technique of Fulguration per Urethram.—It is far more satisfactory to perform fulguration in hospital : as a rule the patient need not be detained for more than two days. A general anæsthetic is to be preferred ; where the number of subsequent treatments is uncertain, spinal anæsthetics are not advisable.

Using the coagulating current on the Genito-Urinary Company's diathermy machine, 3 units is about the right strength ; if one has it too strong the insulating material on the electrode will be damaged. About every three minutes the electrode is changed and the instrument nurse cleans the metal tip with the edge of a discarded scalpel. A treatment should go on until the whole surface of the growth has been whitened by coagulation. Occasionally poor vision from bleeding will terminate the proceedings.

Postoperative Supervision.—Every now and again, one observes a patient with pericystitis following cystoscopic fulguration. This means that the bladder wall has been involved in the burning more than was anticipated. Such a patient must be kept in bed under observation until all symptoms have subsided. On the other hand tenderness may increase, redness or œdema may appear, and there may be constitutional signs of toxæmia. This means that extravasation of urine has occurred, and a suprapubic incision is called for to drain the extravesical tissues. Although it is not essential, it is generally wise to drain the bladder as well, by a small tube suprapubically. An indwelling urethral catheter is not a good alternative, for the drainage may have to continue for a long time.

Clot retention from continual bleeding has been known to occur after fulguration, necessitating evacuation of the clot either per urethram or—if the means of urethral evacuation are not available—by suprapubic incision.

Open fulguration not only has a mortality not met with in fulguration per urethram, but obliges the patient to stay in hospital till the suprapubic wound heals.

Total cystectomy is justifiable where small sessile papillomata reappear so often after treatment that they get out of control.

Radium Implantation.—Where cystoscopic appearances are those of malignant disease radium needles should be implanted through a suprapubic incision ; or radon seeds used after which the bladder may be completely closed. Operation mortality is negligible ; the immediate prognosis is good ; and the long-term results with both techniques are very much better than those of total cystectomy.

PROGNOSIS

One can never assure the patient with any certainty that vesical papillomata will not return. The frequency with which they reappear in another part of the bladder shows that there is some factor in the bladder wall itself which encourages their recurrence.

The growth with the best prognosis is the single villous tumour, which often does not reappear for years. On the other hand it may return after a long period. For example, one of us has seen a small villous papilloma in the bladder of a man aged 56 who had had a papilloma destroyed by cystoscopic diathermy by another surgeon twenty-eight years before.

The growth most likely to recur is the non-villous papilloma which is multiple and sessile.

THE FOLLOW-UP

The above statements show how necessary it is to follow up all cases indefinitely, even though cystoscopy has shown them to be free of growth ; particularly as we know that a quite large growth may be present in the bladder without causing symptoms. The course of events taken by 17 cases in this series, all of whom missed cystoscopy for four years or more, is striking evidence of the need for the regularity of this examination; for in 11 (64%) of them the growth had reappeared. In 10 of these there had been no symptoms at all.

An excellent rule is that, having found a bladder quite free of growth three months after treatment, one should perform cystoscopy again six months later, nine months after that, and then every twelve months.

As already mentioned, with repeated fulguration the tendency of papillomata to reappear may slow down in the course of years.

One of us has a patient who has been under treatment for about eighteen years, and only once has her bladder been seen free of growth. She refused—we think quite rightly—to have a total cystectomy. At her present age of 66, there are still papillomata ; but she enjoys good health and there is no sign of malignancy in the true sense, although the laboratory report on a section of the growth removed at the first operation eighteen years ago pronounced it to be malignant.

A proliferative growth associated with ulceration, whether the latter be raised or excavated, means malignancy, and the patient is unlikely to live more than a year or two from the onset of the ulceration unless radium or radical treatment is carried out.

SUMMARY

This paper reviews 175 cases of simple papilloma of the bladder, 31 of which proved to be malignant, or became so. They form part of a series of 260 cases, in 45% of which malignancy was found.

Cystoscopic fulguration is recommended for all cases of papilloma of the bladder which appear to be simple, and at first, in all doubtful cases as a diagnostic measure. Implantation of radium or radon by the suprapubic route is successful in many malignant cases.

After successful treatment by fulguration, papilloma of the bladder may return even after many years. Regular cystoscopy is essential, so that reappearing growths may have prompt treatment.

AUREOMYCIN AND CHLORAMPHENICOL IN WHOOPING-COUGH

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THE preliminary survey of the effects of chloramphenicol in whooping-cough, described in a previous paper (Gray 1950), did not lead to any definite conclusions because the cases were too few and an untried method was used for assessing results. When this year's epidemic began, the investigation was reopened and was extended to include a trial of 'Aureomycin.' The same method as before was adopted for gauging the progress of the "treated" and controlled children. The mother kept a written record of the number of paroxysms of all types that her child had in each 24 hours. The children were treated as hospital outpatients but were seen daily except at weekends.

No child was accepted for the trial unless three of the following four conditions were present: (1) an absolute lymphocytosis; (2) a normal erythrocyte-sedimentation rate; (3) a paroxysm observed during a visit to the hospital; and (4) isolation of *Hæmophilus pertussis* from a postnasal swab. For the bacteriological test a new selective medium (Lacey 1951) was tried. This returned 35% of the swabs as positive in the first month, 75% in the third month, and 84% in the final month; whereas parallel cultures on ordinary Bordet-Gengou medium gave 50–55% positive plates. The poor early results with the new medium were due to inexperience.

On the day after the patients were first seen they were all started on four-hourly doses of a chocolate-milk-sugar powder which was almost indistinguishable from one of the forms of aureomycin used. Between the third and fifth days, when the diagnosis was fully established, the cases chosen for antibiotic treatment were changed to either aureomycin or chloramphenicol which was continued for five days, after which they returned to the placebo powder and continued with this until their discharge. No child with a history of more than 20 days' illness was given antibiotic treatment. The average daily cough-counts in the control and treated groups were plotted on graphs, which also showed the average day of disease on which the patients were first seen and the average time elapsing between onset and the start of treatment.

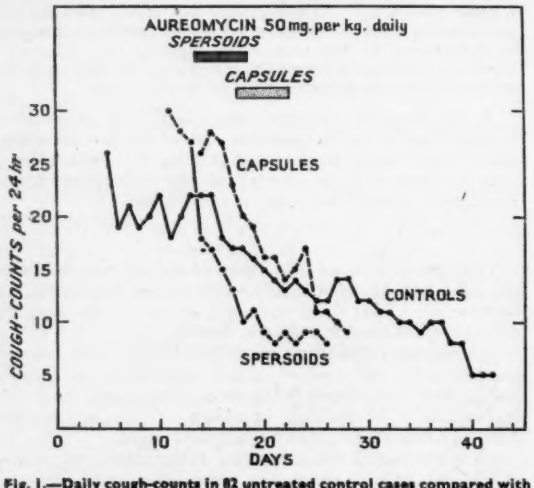

Fig. 1.—Daily cough-counts in 82 untreated control cases compared with those in cases treated with aureomycin 50 mg. per kg. of body-weight daily for five days, 28 receiving the drug in the form of spersoids, and 10 in that of capsules.

RESULTS

Controls

The control curve in fig. 1 illustrates the normal course of the disease, without any specific treatment, in the 1950 epidemic. The average cough-count on the day before the placebo was started was 26; with the institution of what the mothers looked upon as treatment it dropped to 18–22 per twenty-four hours; it stayed at this level for eleven days and then steadily declined to reach 5 coughs daily by the fortieth day of the disease. In general the trend followed that of the 1949 epidemic.

The graph suggests that giving the placebo powders had a slight psychological effect on the mothers, but this in no way invalidates the use of their cough-counts as a yardstick for measuring the results of treatment.

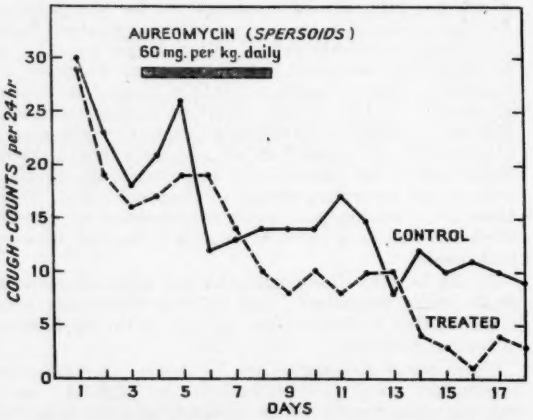

Fig. 2.—Daily cough-counts in identical twins aged 3 years and weighing 16 kg. each. One twin was given aureomycin 60 mg. per kg. of body-weight daily for five days, while the other was an untreated control.

Aureomycin

Two preparations of aureomycin were given: (1) 'Spersoid,' in which the aureomycin was dispersed evenly in a chocolate-sugar powder, so that 3 g. (1 level teaspoonful) of the powder contained 50 mg. of active aureomycin; and (2) the usual capsules, each containing either 50 or 250 mg. Children up to 4 years were given spersoid. Over that age they received either 50 or 250 mg. capsules, depending on the child's ability to swallow. The daily dosage for the 38 cases was 50 mg. per kg. of body-weight divided into four-hourly doses. Treatment was continued for five days.

Fig. 1 shows the results with spersoid in 28 cases and with capsules in 10 cases. It seems clear that aureomycin in the spersoid form definitely reduced the cough-count: thus by the twenty-second day of disease the average count of the patients treated in this way had reached the level attained by the untreated cases on the thirty-eighth day. On the qualitative side, however, the cough remained hard, and vomiting and whooping still continued. When the aureomycin was given in capsules the average cough-counts were the same as in the controls until the final day of treatment, when there was a fall, suggesting that the treatment had some effect. As in the children given spersoid, the cough in this group remained hard and the vomiting and whooping were not checked.

In a few cases the dosage of aureomycin in spersoid form was raised to 60 mg. per kg. daily for five days. There were not enough patients in this group to be comparable with the series given 50 mg. per kg. daily. However, fortune favoured this part of the inquiry

by sending identical twins with whooping-cough to the hospital. One of these children was used as a control and the other was given the 60 mg. per kg. dosage. Fig. 2 shows that the treated child's cough-counts closely followed the curve of the children on 50 mg. per kg. until the last of the five days' observation, when it fell to 1–4 daily, though the cough was still hard and dry.

Chloramphenicol

Chloramphenicol was also given in two forms: (1) an emulsion in lemon syrup containing 250 mg. of chloramphenicol per drachm was used for infants up to 1 year of age; and (2) capsules, each containing 250 mg., were given to children over the age of 4 years. The treatment of children between the ages of 1 and 4 years is still a difficult problem, because of the extremely bitter taste of chloramphenicol and the objection of these children to swallowing capsules.

Whichever preparation was chosen, the dosage was 100 mg. per kg. of body-weight once daily, at bedtime, for five days. This routine was based on the observation that a single large dose of chloramphenicol almost completely sterilises the upper respiratory tract. Since *H. pertussis* is sensitive to chloramphenicol at relatively low concentrations, it seemed possible that such widely spaced doses would effectively control the disease, and the treatment would then be much simplified.

The results in the 21 treated cases are compared with the controls in fig. 3. It will be seen that the cough-counts were greatly reduced by the chloramphenicol. By the twenty-third day of the disease the average count in the treated patients had reached the level that the controls attained on the forty-second day. In contrast with the children treated with aureomycin, those receiving chloramphenicol lost their whooping and vomiting and their cough became loose and productive.

Comments

Two unconnected points are worth noting. The first is the remarkable effect of aureomycin in the spersoid form on the children's appetite. Whooping-cough is notorious for producing vomiting and a disinclination to eat. Yet by the fourth or fifth day of spersoid treatment, in spite of the persistence of vomiting after a paroxysm, these children developed an almost pathological craving for food. So many mothers volunteered this information that notice had to be taken of it. None of the controls and none of the patients treated with aureomycin capsules or with chloramphenicol gave a similar story.

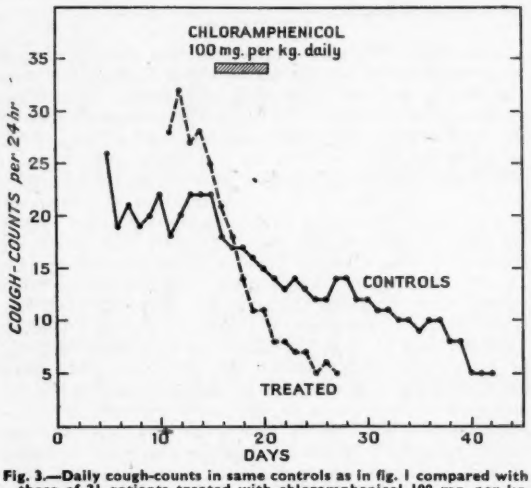

Fig. 3.—Daily cough-counts in same controls as in fig. 1 compared with those of 21 patients treated with chloramphenicol 100 mg. per kg. of body-weight for five days.

The second point is the poor randomisation of cases, which will be seen in the graphs. Despite the attempt to balance the numbers of cases of about similar severity in the treated and untreated groups, there was in fact a preponderance of the most severe cases in the treated groups. This maldistribution, which was not recognised until the data were analysed after completion of the tests, weighted the chances against the antibiotics and so added to the significance of any effects that they were shown to exert on the course of the disease.

DISCUSSION

It may be objected that this trial was wholly dependent on the mothers' estimates of progress, that they are unreliable witnesses, and that a satisfactory assessment of antibiotic treatment in whooping-cough can only be made on cases treated in hospital.

Personal experience with information obtained from hospital sources has shown it to be of little value. The nurses, short-handed and with a large number of ill children to look after, cannot be expected to produce accurate measurements of daily changes in so ephemeral a thing as a cough. In the end, the information is usually based on impressions gained from the physicians, house-officers, and nurses, whose observations vary widely in reliability and regularity. In contrast, we have found the mothers conscientious and painfully accurate, because they have a vested interest in the children being treated and have but one patient to nurse.

It has been suggested that a better index would be the effect of the antibiotic on complications such as atelectasis, eclampsia, &c. Unfortunately, in whooping-cough many of these tragedies are due to mechanical factors—plugging of bronchioles with mucus or of cerebral capillaries with lymphocytes—and an antibacterial substance cannot be expected to exert kinetic energy for the dislodgment of these blocks. However, an effective treatment, if given in time, must be able to prevent such complications. In the long run its efficacy in this respect can best be established by showing that it has produced a significant drop in the pertussis death-rate in the Registrar-General's returns. The method used in this trial seems to be the most satisfactory one for rapidly assessing the value of aureomycin and chloramphenicol in pertussis.

The results suggest that both aureomycin and chloramphenicol are effective in whooping-cough. The findings with chloramphenicol confirm the apparent cures obtained at the same hospital in the pilot trial (Gray 1950) during last year's epidemic. In the U.S.A., Bell et al. (1949) treated 20 cases of pertussis with aureomycin and thought it shortened the disease, but striking results were only obtained when the drug was given in the early stages of the infection. Before the results with the two antibiotics are compared, it should be pointed out that the correct dosage of either has not yet been found. The impression gained from the present trial is that the amount of aureomycin given was too small, and that the clinical results might have been better with a dosage of 100 mg. per kg. daily in divided doses. The dosage of chloramphenicol used last year now seems unnecessarily high, whereas this year's seems not quite high enough. A suitable intermediate dosage would be 100 mg. per kg. once a day (as in the trial) followed at eight-hour intervals by two maintenance doses of 60 mg. for infants of under a year, 125 mg. for children of 1–3 years, and 250 mg. for those over 3 years.

The difficulty of administration to children of 1–3 years is said to have been overcome in the case of aureomycin by giving it in a palatable chocolate-powder

vehicle. But in my view this powder's content of aureomycin—50 mg. in each teaspoonful—is too small. Thus, a child weighing 15 kg., who is ordered a daily dosage of 50 mg. of aureomycin per kg. of body-weight, will have to take fifteen teaspoonfuls of the chocolate-powder every day—enough to lead most children to rebel after three or four days. If the present aureomycin content was doubled, or better still trebled, the powder should be satisfactory. The taste of chloramphenicol is harder to disguise, and so far no vehicle has been discovered which will wholly cover it up. But the experienced nurse or mother can usually get the doses taken without much trouble.

The association of a voracious appetite with aureomycin dosage is only seen when the antibiotic is given in a dispersed form; it was not reported in any case receiving aureomycin in gelatin capsules, which may be digested in the duodenum. Aureomycin in spersoid, however, comes in close contact with the gastric mucosa, and the effect on appetite may depend on this fact. The observation recalls the so-called growth factor described as intimately related to aureomycin. Is it possible that the increased growth noted in animals when this factor is added to their feeds is simply the result of a greatly enhanced appetite?

SUMMARY

A controlled trial of aureomycin and chloramphenicol in the outpatient treatment of children with whooping-cough has shown that both antibiotics are effective in reducing the cough-count, but chloramphenicol also lessens the whooping and vomiting and loosens the cough.

Children receiving aureomycin in powder form develop a voracious appetite.

I am indebted to Dr. W. H. Bradley for his continued interest; to Mr. J. A. Rouse for much help; and to the Lederle Laboratories Division, Cyanamid Products Ltd., for the supply of aureomycin used in this trial.

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TREATMENT OF TYPHOID FEVER WITH CHLORAMPHENICOL

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WHEN the S.S. *Mooltan* docked in London on Dec. 15, 1949, with a total complement of 1012 crew and passengers, 3 members of the crew were removed to hospital with typhoid fever. Ultimately 67 typhoid excretors, 10 of whom seemed to be carriers, were found, and 21 of these were admitted to the Brook Hospital.

The first was admitted on Dec. 16, the twelfth day of his illness, his symptoms having appeared between Port Said and Marseilles. Later, patients were admitted at various periods, some of them as early as the third day of illness. Of the 21 patients, 8 were British and 13 Asiatic.

CONDITION ON ADMISSION

The cases were of typical typhoid fever with toxæmia, the majority experiencing headache, cough, and abdominal discomfort. In most of the second-week cases there was tenderness under the left costal margin, though the spleen was not palpable. Some diarrhœa was experienced by most of the patients. Of these cases 6 were graded as mild, 7 as moderately severe, and 8 as severe.

DETAILS OF CASES

Case no.	Age (yr.)	Nationality*	Clinical severity	Day of disease on which treatment was started	Total duration of treatment (days)	Total dosage (g.)	Day of disease on which relapse occurred	Days between end of 1st treatment and onset of relapse
Cases which relapsed								
1	28	B	Severe	15	10	26·5	37	12
2	25	I	Severe	10	26†	62·5	55	15
3	55	I	Mild	12	9	23	34	13
4	19	B	Mild	10	9	22·75	29	10
6	22	B	Severe	12	10	26·5	38	16
7	28	B	Moderate	11	14	44·5	36	11
8	25	B	Moderate	8	2	22	41	30
12	43	G	Severe	7	13	35	32	12
15	34	I	Moderate	6	2	20	19	11
16	21	B	Mild	5	2	20	21	14
18	59	G	Severe	13	17	49·5	48	14
20	17	B	Mild	6	2	20	34	26
Mean	—	—	—	9·6	9·7	31·2	35·3	15·3
Cases without Relapse								
5	22	B	Moderate	12	9	23·25	—	—
9	46	G	Mild	6	2	20	—	—
10	40	G	Severe	11	10·5	42	—	—
11	50	G	Moderate	16	12·5	43·5	—	—
13	43	G	Moderate	9	9	20	—	—
14	33	I	Mild	4	2	20	—	—
17	55	G	Moderate	8	15	33·5	—	—
19	53	I	Severe	8	14	32	—	—
21	42	I	Severe	6	18	32	—	—
Mean	—	—	—	8·9	10·2	29·6	—	—

* B, British; I, Indian; G, Goanese
† Case of cystitis: two courses of ten and sixteen days.

PROGRESS

There were no deaths, and complications were very few. Convalescence was generally rapid and uneventful. There was no evidence of any vascular thrombosis: there were no cases of hæmorrhage or perforation. One patient developed deeply eroded lingual and scrotal ulcers, which persisted for three or four weeks before healing; serological tests for syphilis were negative. Another patient developed cystitis due to *Salmonella typhi* shortly after the first course of treatment, which led to two relapses and needed altogether three courses of chloramphenicol; the last course apparently finally cured the illness, and the urine and fæces became free from typhoid bacilli.

TREATMENT

Treatment with chloramphenicol was started as soon as possible after admission, at times varying between the fourth and sixteenth day of disease. Two types of therapy were used. The first 6 patients were treated by a standard Woodward-Smadel régime—i.e., 4 g. as a loading dose followed by 3 g. daily until twenty-four hours after disappearance of fever, and 1·5 g. daily for five days afterwards. The duration of treatment in each case is shown in the accompanying table. After the first 6 patients had been admitted and treatment started, it was thought possible, after discussion with Dr. W. H. Bradley, that a more intensive course for a shorter time might be effective, and it was decided that short intensive treatment, consisting of 4 g. as a loading dose followed by 2 g. six-hourly up to a total of 20 g. in forty-eight hours, should be given to what were considered the less severely ill patients, and the more orthodox régime given to the more severely ill. The selection of cases for the two series was therefore not purely random. Of the 10 patients who were intended to have only the short course of treatment 4 showed well-marked symptomatic improvement at the end of the

first forty-eight hours, but seemed not to be maintaining their improvement in the next forty-eight hours; so treatment was continued on the general lines of the Woodward-Smadel régime.

The material therefore consists of 6 patients who had an intensive course for forty-eight hours only and 15 patients who had varying periods of treatment, from nine days upwards. The total dosage of chloramphenicol was 20–35 g.

RESPONSE TO TREATMENT

Our results were similar to those already recorded by Smadel et al. (1949), Woodward et al. (1950), and others. There was a conspicuous general improvement, both subjective and objective, in forty-eight hours, and defervescence usually took place within four days. One patient, who required a heavy dose of 35 g. in thirteen days, was not completely afebrile until the seventh day of treatment, and another patient developed a cystitis and recrudescence of pyrexia while still receiving chloramphenicol.

TOXIC EFFECTS

No toxic effects were observed except internal ophthalmoplegia, which led to difficulty in vision and was reported in 4 of 10 patients who received the heavy dose of 20 g. in forty-eight hours. This incidence may be lower than the true figure, since many of the patients did not read and did not report minor symptoms owing to linguistic difficulties. The ophthalmoplegia was purely temporary and only lasted during the period of heavy dosage. Gray (1950) noted visual effects of chloramphenicol in the clinical treatment of pertussis and in normal volunteers; symptoms appeared to occur at a blood-chloramphenicol level of about 50 μg. per ml. Ralston and Payne (1950) also noted eye symptoms during the treatment of brucellosis with chloramphenicol. Nausea and vomiting were conspicuously absent.

RELAPSES

As in all previous series treated with chloramphenicol, the relapse-rate was very much higher than in any earlier typhoid series; it amounted to 12 out of our 21 (57%). A second relapse was noted only in 1 case—the patient with cystitis. Most of the relapses were severe, being characterised by a rapidly attained pyrexia up to 103°–104°F and by recrudescence of the toxæmia, malaise, &c., of the main attack. The recurrence of a bacteræmia was confirmed by blood-culture in all relapses except one. The one exception was clinically typical and at the time when relapse might have been expected, but repeated

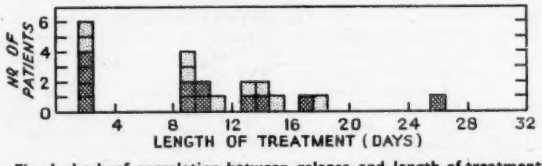

Fig. 1—Lack of correlation between relapse and length of treatment with chloramphenicol: hatched columns, patients who did not relapse.

blood-cultures were negative. This relapse and one other, which was not severe, did not receive specific treatment, and recovery took place in five and six days respectively. All the other relapses were severe and were treated with relatively long courses of chloramphenicol, to which they responded as the initial attack had done. All the cases of this series are summarised in the table, those which relapsed being separated from those which did not.

Relation of Relapse to Length of Treatment.—Of the 6 cases treated for only forty-eight hours 4 relapsed, whereas of the 15 treated for nine days or more, 8 relapsed. The difference in relapse-rates of these two groups is not

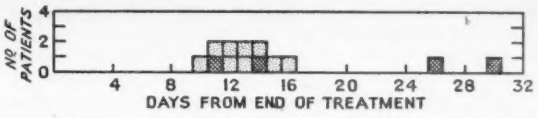

Fig. 2—Time relation of relapses to end of treatment: stippled columns, patients treated for nine days or more; hatched columns, patients treated for only forty-eight hours.

statistically significant. Fig. 1 shows the distribution of relapses against the length of initial treatment. The suggestion of Smadel et al. (1949) that relapse is inversely related to the length of treatment, and their report that no relapse occurred among patients treated for longer than eight days, is not confirmed by our findings. In our series there seemed to be no correlation whatsoever.

Time of Relapse in Relation to Previous Treatment.—Fig. 2 shows the date of onset of the relapses in relation to the cessation of previous treatment. Except for 2 cases, the relapses all occurred between ten and sixteen days after the cessation of therapy—which is approximately the normal incubation period of typhoid fever. The day of relapse seemed to have no relation to the period which had elapsed from the beginning of the illness.

BACTERIOLOGY

The organism concerned in this outbreak was grouped by Dr. A. Felix, F.R.S., as belonging to phage-type A. It was inactivated in vitro by a concentration of chloramphenicol 3 μg. per ml. In accordance with previous experience of Woodward et al. (1950) this sensitivity was maintained in organisms isolated from the blood, urine, and fæces, whether from the original illness, convalescence, or relapse. There was no evidence of development resistance to chloramphenicol.

Blood-culture was used to isolate typhoid bacilli from all the patients, but serial cultures following diagnosis were not carried out except to confirm relapses suspected clinically. Fæcal and urinary cultures were carried out regularly.

Although the organisms disappeared from the blood very rapidly after the administration of chloramphenicol, the effect on fæcal cultures and urinary cultures was far from consistent. On the whole, the organism tended to disappear from the fæces during the periods of high dosage, but this was by no means constant, and some patients continued to excrete typhoid bacilli even in the presence of very high blood levels of the drug. The onset of clinical relapse and positive blood-culture was not always associated with a return of bacilli to the fæces if these had been absent previously. Woodward et al. (1950) found relapses in 4 out of 5 patients who continued to excrete typhoid bacilli under treatment.

BLOOD LEVELS

Blood-chloramphenicol levels were consistently estimated in the present series. The method used was inactivation of *Bact. pneumoniæ* K3 as test organism. The strain used had a sensitivity of about 3 μg. per ml. and was found suitable for the period when patients were having fairly large doses of chloramphenicol. When doses of 1·5 g. a day or less were given, this organism was not sensitive enough, and another strain (K41) with a sensitivity of about 0·5 μg. per ml. would probably have been better.

We had considerable difficulty at the beginning in not appreciating that both these organisms are much inhibited non-specifically by the sera of many ill patients, and this intrinsic bacteriostatic action, plus the effect of chloramphenicol, prevented the growth of ordinary inocula in serum dilutions up to 1/250 in some cases. This intrinsic bacteriostatic action is readily destroyed by inactivation for thirty minutes at 56°C, and this should

always be done if any antibiotic is being tested against this type of organism.

Chemical assays by the method of Glazko (1949) were also made in parallel with the biological methods. On the whole, the results were similar in the lower ranges. In the higher ranges the chemical estimation sometimes gave rather higher values than did the bacteriological. This may have been because the chemical method does not distinguish chloramphenicol from some of its inactive metabolic products.

The levels found in the patients on the orthodox Woodward-Smadel treatment were similar to those already recorded by previous observers: with the massive dosage of 20 g. in forty-eight hours the highest level reached was 150 μg. per 100 ml. by the bacteriological and 185 μg. per 100 ml. by the chemical method. This was in a small man, who weighed only 7 st.; in most of the patients on this dosage, however, only about 75 μg. per 100 ml. was reached.

A rough correlation between the dose of chloramphenicol per kg. of body-weight and the blood-chloramphenicol level was found, but there was a good deal of individual variation. In all the patients on either the massive dosage or the orthodox régime the levels attained indicated satisfactory absorption of chloramphenicol, but there was no obvious association between those levels and the clinical results. The levels we found in the blood while patients were having 1·5 g. a day were, however, so low that we doubt whether the continuation of the ordinary course with this dosage had any therapeutic value.

SUGGESTIONS FOR FUTURE TREATMENT

Our results have shown no significant difference in the relapse-rate between those treated for forty-eight hours only and those treated for longer periods. Knight et al. (1950) found that, though 3 patients treated for only sixty hours did not relapse, 4 out of 10 treated for longer periods did. They therefore suggest that, to avoid relapse, treatment should continue very much longer. Smadel, at the Royal Society of Tropical Medicine on Feb. 16, 1950, suggested tentatively that five days' treatment should be followed by five days' rest and then a further five days' treatment.

From our experience the rest period seems too short, and we therefore suggest that treatment should be considered on the following lines: initial treatment with chloramphenicol 3 g. daily should be given until the patient is apyrexial; then there should be ten days' rest; and this should be followed by a further course of 3 g. daily for three days.

SUMMARY

21 cases of typhoid fever among passengers and crew of s.s. *Mooltan* were treated with chloramphenicol. In all of them the early result was satisfactory, but 12 of 21 cases relapsed, usually ten to sixteen days after cessation of therapy. There was no correlation between relapses and previous dosage or duration of treatment.

A modified scheme of dosage is suggested.

Our thanks are due to Dr. M. T. Morgan, medical officer of health, Port of London, for the information he has so freely placed at our disposal; Dr. J. C. Thompson, who made the biochemical estimations of chloramphenicol in the blood; and Mr. B. S. Mansell and Mr. J. E. S. Greenstreet, who did the greater part of the technical work.

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CHLORAMPHENICOL IN SUBACUTE BACTERIAL ENDOCARDITIS

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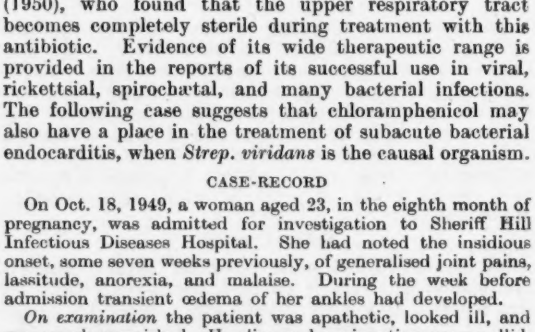
THE comprehensive antibacterial effect of chloramphenicol is demonstrated in the experiments of Gray (1950), who found that the upper respiratory tract becomes completely sterile during treatment with this antibiotic. Evidence of its wide therapeutic range is provided in the reports of its successful use in viral, rickettsial, spirochætal, and many bacterial infections. The following case suggests that chloramphenicol may also have a place in the treatment of subacute bacterial endocarditis, when *Strep. viridans* is the causal organism.

CASE-RECORD

On Oct. 18, 1949, a woman aged 23, in the eighth month of pregnancy, was admitted for investigation to Sheriff Hill Infectious Diseases Hospital. She had noted the insidious onset, some seven weeks previously, of generalised joint pains, lassitude, anorexia, and malaise. During the week before admission transient œdema of her ankles had developed.

On examination the patient was apathetic, looked ill, and was poorly nourished. Her lips and conjunctivæ were pallid, and her skin had a light brownish-yellow tint. The fingers showed early clubbing. The pulse was of poor volume and tension. Her apex-beat was diffuse, and a palpable thrill was present. Clinically the heart was enlarged. The first sound in the mitral area was obscured by a loud harsh murmur, which continued throughout systole and was widely conducted. The second sound in the pulmonary area was reduplicated. Although fœtal heart sounds were clearly audible, uterine



Erythrocyte-sedimentation rates and blood-cultures during treatment.

enlargement was not consistent with the duration of pregnancy. Temperature 101·2°F, pulse-rate 112 per mm., blood-pressure 95/75 mm. Hg, erythrocyte-sedimentation rate (E.S.R.) 38 mm. in one hour and 82 mm. in two hours (Westergren), Hb 66%. White-cell count 9700 per c.mm. (polymorphs 80%, lymphocytes 18%, monocytes 2%).

During the patient's first week in hospital she had an irregular intermittent pyrexia, ranging between 98·2° and 103·4°F, and *Strep. viridans* was isolated from two separate blood-cultures.

Treatment with Penicillin.—On Oct. 25, treatment with penicillin was begun, 100,000 units being given two-hourly (1·2 mega units a day). The patient's temperature fell by lysis during the first forty-eight hours of this treatment, and she remained apyrexial for eleven days.

On Nov. 7 there was a sudden return of her pyrexia (101·2°F). Next day the E.S.R. was 47 mm. in one hour and 98 mm. in two hours, and her temperature had risen to 101·8°F. On the 9th the dosage of penicillin was doubled to 200,000 units two-hourly (2·4 mega units a day), whereupon the patient again became apyrexial within forty-eight hours. After an initial improvement the E.S.R. again deteriorated, but it subsequently progressed satisfactorily (see figure).

On Dec. 3, while still receiving penicillin, the woman gave birth to a full-term baby weighing 4½ lb., who survived for only four hours.

On Dec. 30 the patient had been apyrexial for seven weeks. All blood-cultures taken during treatment had been negative,

her E.S.R. was 10 mm. in one hour and 22 mm. in two hours, and her general condition had improved considerably. Accordingly, on that date, penicillin was discontinued, after sixty-five days' continuous treatment.

Subsequent Progress.—On Jan. 7, 1950, eight days after penicillin therapy had ended, the patient had a transient rise in temperature to 99·4°F. A blood-culture taken on Jan 14 again grew *Strep. viridans*. On Jan. 18 the E.S.R. had deteriorated to 27 mm. in one hour, and 66 mm. in two hours.

Treatment with Chloramphenicol.—It was decided to have the infecting organisms tested for sensitivity to chloramphenicol, and it was found that chloramphenicol inhibited growth in a dilution of at least 1 in 40,000. On Jan. 23, after another blood-culture had grown *Strep. viridans*, a course of chloramphenicol was begun; she was given 8 capsules (2 g.) in the first hour and then 2 capsules (0·5 g.) four-hourly for twenty-two days (total 68 g.). During treatment with chloramphenicol blood-cultures were done every three days, and none grew *Strep. viridans*. By the tenth day of this treatment the E.S.R. had slowed to 5 mm. in one hour and 8 mm. in two hours, and it did not again rise above this level.

On March 15 it was noted that during the four weeks since the end of the course of chloramphenicol the patient had remained apyrexial, her E.S.R. had been constantly well within normal limits, and twice-weekly blood-cultures had all been reported negative for *Strep. viridans*. Her general condition had greatly improved. She said she felt perfectly well, and asked to be discharged from hospital to continue convalescence at home.

Follow-up.—On April 19 the patient was readmitted for examination. Her general condition was good; her skin had a healthy colour; her appetite had returned; and she was gaining weight. She was apyrexial, and her E.S.R. was 3 mm. in one hour and 7 mm. in two hours. There was no anæmia (red cells 5,070,000 per c.mm., Hb 103%, white cells 5100 per c.mm.). There was clinical evidence of residual damage to the mitral valve, and the cardiac shadow showed considerable enlargement of the left auricle and ventricle, but there were no signs of congestive failure.

COMMENT

The in-vitro sensitivity of the infecting organisms, the rapid disappearance of *Strep. viridans* from the bloodstream during treatment, and the corresponding rapid improvement in the E.S.R. suggest that this patient was benefited by the chloramphenicol.

It is fallacious to generalise on the response of a single case to a particular form of treatment, but it seems that chloramphenicol is worthy of further trial in subacute bacterial endocarditis, at least in *Strep. viridans* cases which prove resistant to penicillin therapy.

My thanks are due to Dr. J. Grant, medical superintendent, who obtained permission from the Ministry of Health for the use of chloramphenicol in this case, for his help and criticism; and to Dr. R. Norton, director of the Public Health Laboratory, Blakelaw, Newcastle upon Tyne, who carried out all the bacteriological investigations, including the chloramphenicol-sensitivity tests.

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Reviews of Books

Postgraduate Obstetrics and Gynæcology

F. J. BROWNE, M.D., D.SC., F.R.C.S.E., F.R.C.O.G., emeritus professor of obstetrics and gynæcology, University of London; consulting obstetric surgeon, University College Hospital. London: Butterworth. 1950. Pp. 501. 50*s*.

Professor Browne's book consists of material selected from talks given to doctors specialising in obstetrics and gynæcology. If this fact is appreciated the arrangement will seem less surprising, and it will be understood that he is not offering a complete textbook. The reputation of his lectures has reached many and distant parts of the world. He has written, as he has spoken, from a life's work; and because he has always been a conscientious and accurate observer, the value of his statements is great. The text is profusely illustrated with excellent photographs and pen-and-ink drawings; each chapter ends with a comprehensive bibliography to enable further search and research to be made; and a carefully compiled index concludes the book.

Tissu nerveux et pathologie rénale

CHARLES DE MUYLDER, agrégé de l'enseignement supérieur, Université Catholique de Louvain. Paris: Masson. 1950. Pp. 148. Fr. 600.

WE are already indebted to Dr. De Muylder for valuable studies of the renal innervation. In this book dealing with the normal and the pathological kidney, he discusses our incomplete knowledge of renal histology, which he has himself supplemented by embryological, comparative anatomical, experimental, and pathological studies.

The special relations of nervous tissue with the kidney are, he finds, more than an "innervation" in the ordinary sense of that term. During development there is a mesectodermic contribution, with latent nervous possibilities, to the kidney from the lumbar ganglionic crest. This contribution appears to be most precise at the level of the macular segment of the distal convoluted tubule, and the epithelioid cells of the juxtaglomerular apparatus are probably mesectodermal in origin. The nervous system provides the kidney with a rich though essentially vascular innervation with numerous terminal formations. Nerve-cells are few, unmyelinated fibres plentiful, myelinated fibres present but relatively rare. In his view, the juxtaglomerular apparatus, with its particularly precise nervous contribution, is probably the centre for the regulation of the nephron circulation. He believes that renal ischæmia in man must in most cases be nervous in origin, producing hypertension, when prolonged, through an endocrine mechanism; but he finds it impossible to decide with certainty, at present, which particular cells are responsible for the secretion.

The work must interest all nephrologists. It clears up many hitherto contentious points, summarises certain aspects of the literature, and stimulates thought. However, those keeping track of investigations being made in many places on the renal innervation will realise that even this fine contribution cannot solve all the problems: an international conference, at which all the evidence can be presented and fully discussed, is surely indicated. Meanwhile, Dr. De Muylder's new publication is welcome.

Clinical Applications of Suggestion and Hypnosis

WILLIAM T. HERON, PH.D., professor of psychology, University of Minnesota. Springfield: Charles C. Thomas. London: Blackwell Scientific Publications. 1950. Pp. 116. 22*s*. 6*d*.

SINCE the heyday of hypnosis, at the turn of the century, little has been added to our knowledge of its indications and limitations. Thus the monographs of Moll and of Forel, both published in 1889, give practically the same information as the numerous recent works. In either case the theories advanced to explain its effects are far from plausible, and hypnosis remains a mystery which has resisted persistent and intelligent attempts to discover its true nature. While its place in psychotherapy is now regarded as rather limited, the experience gained in learning to hypnotise is of great value in the training of psychotherapists, whatever methods they may later employ. It is reasonable to suggest, too, that a background knowledge of the technique can assist the anæsthetist in his approach to some kinds of patient, however mechanised his art has now become.

In hypnotising the first few cases everything depends on a sound technique and a suitable attitude to the task. Professor Heron's lucid manual is full of really practical help. The book is addressed to the professional reader, with a proper respect for the dangers of the method in uninformed hands. The author's proposals for the use of hypnosis and suggestion in dentistry will be of interest to any dental surgeons not influenced by the time-factor, and the instructions given are easy to follow. The idea of getting the edentulous patient under hypnosis to imagine himself at the age when he had sound teeth and to shut his mouth and hold it as he did then,

while the bite is adjusted, must be original; and Professor Heron is careful to point out that the success of the method is attested only by the reports of a number of dentists rather than by any scientific evidence.

This book is a sound guide for anyone who wishes to learn to hypnotise or to improve his technique. The hypnotist is presented as the tutor of his patient rather than as a dramatic figure imposing his will on another, and the book is notably free from doubtful claims and speculations.

Injuries to the Ankle

J. GRANT BONNIN, M.B. Melb., F.R.C.S., orthopædic surgeon, Central Middlesex Hospital, London. London: Heinemann Medical Books. 1950. Pp. 405. 63*s*.

BECAUSE Mr. Bonnin evidently has a passionate interest in fractures and other injuries around the ankle-joint, and can communicate his enthusiasm, his book will interest every practising orthopædic surgeon—though it may not appeal to less senior students. Enthusiasm has its drawbacks, however, and the lengthy expositions of the historical and experimental aspects of the subject and a somewhat over-zealous classification of injuries by their mechanism of production may tire the reader searching for practical advice. This is a pity, for sound surgical guidance in treatment is there in abundance, though embedded in other material. Mr. Bonnin is an advocate of open operation, evoking the spirit of Lane; but though it is clear that, in his hands, operative fixation of ankle fractures gives excellent results, the experience of others less skilful may prove less happy.

Despite the strains which in places it imposes on the reader, this book is likely to prove a success.

A Clinical Pathology: Application and Interpretation

BENJAMIN B. WELLS, M.D., PH.D., professor of medicine, University of Arkansas. Philadelphia and London: W. B. Saunders. 1950. Pp. 397. 30*s*.

THIS comparatively small book differs in approach from the standard works on the subject. "Beginning with a clinical situation, the applicable laboratory procedures are selected and their contributions to the problem are discussed with just enough theory and methodology to convey proper meaning and purpose." There are few illustrations and very few references are given, though it is apparent that many have been consulted. The scope is limited, but the book may help the clinician to choose and understand simple tests.

An Introduction to Personality Study

RAYMOND B. CATTELL, research professor in psychology, University of Illinois. London: Hutchinson's University Library. 1950. Pp. 235. 7*s*. 6*d*.

IN the more descriptive parts of this handbook Professor Cattell has drawn effectively on the writings of Freud and McDougall. He is less fortunate in his attempt to apply the statistical techniques of "factorial analysis" to his concepts of human personality. The book will be of value to undergraduate students of psychology, for it contains much material in summary and schematic form, and a number of useful comparisons are made between writers of different schools. It cannot be recommended as an introduction to the subject for those whose primary interests lie in other fields.

A Pocket Obstetrics

(2nd ed.) ARTHUR C. H. BELL, F.R.C.S., F.R.C.O.G., obstetric surgeon, Westminster Hospital, London. London: J. & A. Churchill. 1950. Pp. 156. 7*s*. 6*d*.

If time is short and knowledge weak
Synopsis series you may seek.
This little work by Arthur Bell
May do the job and suit you well.
(A book condensed, but still complete,
May yet examiners defeat).
The text is brief and quickly told,
Advice is sound and dogma bold,
But do not, reader, be misled.
For all our praise, it can't be said
That Bell's synopsis, be it good,
Replaces textbooks; never could!

British Encyclopædia of Medical Practice (2nd ed. London: Butterworth Medical Publications. 1950. Vol. 3. Pp. 669. £3).—The new edition of this important work, edited by Lord Horder, is coming out at a spanking pace; the first three volumes have appeared in four months. The publishers can fairly claim that, with the annual cumulative supplement, the articles never fall greatly behind the times. Moreover, the supplement can readily be correlated with the main volumes, whose pages contain key numbers for cross-reference.

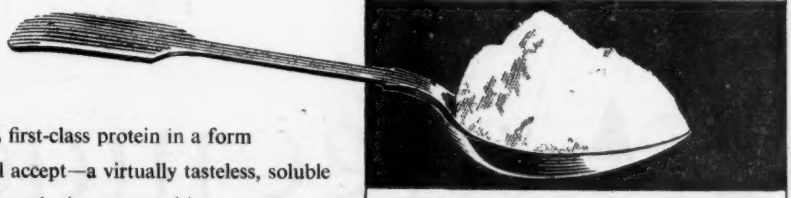
Operations of General Surgery (2nd ed. Philadelphia and London: W. B. Saunders. 1949. Pp. 890. 67*s*. 6*d*.).—The second edition of this textbook by Prof. Thomas G. Orr, of Kansas, has had so many additions that it is almost a new book. Certainly it is much more useful to the general surgeon. It now contains descriptions of modern operations upon the lungs, œsophagus, and blood-vessels, and everywhere are signs of extensive revision. Even greater help would have been given to the reader if more had been said about the difficulties and risks met in carrying out the instructions laid down. But as a bibliography is attached to each section, those interested can refer to original sources.

Orthopædic Surgery (4th ed. London: Edward Arnold. 1950. Pp. 1016. 50*s*.).—This is the first new edition of Prof. Walter Mercer's textbook since the war, and marks almost two decades of continuous success with generations of students. The well-revised volume now runs to over 1000 pages, but its comfortable personal style makes it easy reading. The thoughtful essays on cervical and lumbar intervertebral disc prolapse are notably sound, and it is gratifying to see the management of peripheral vascular disease retained in an orthopædic textbook. The sections on osteomyelitis and infections of the hand perhaps have an over-surgical approach to treatment, nowadays somewhat outmoded; and the importance of deciding between primary or delayed suture in osteomyelitis is not perhaps sufficiently stressed. But these are minor criticisms of an old favourite.

Fortschritte der Tuberkuloseforschung (Basle: Karger. 1950. Pp. 307. Sw. fr. 38.).—To write a critical analysis of recent work, and review the subject lucidly and comprehensively in the light of such work, is never easy. Two articles in this volume are outstanding: that by G. Canetti on tuberculous allergy, and a second by Canetti and G. Rocher on streptomycin resistance. They will be a valuable guide to workers who approach these subjects afresh, but also to those lost in the morass of accumulated literature. Each article in the volume is by an acknowledged authority in the particular field reviewed: Florence Seibert summarises progress in the chemistry of tuberculin; G. Middlebrook writes on recent advances in bacteriologic research, K. Diehl on congenital factors in tuberculosis, and H. Good on the surgery of pulmonary tuberculosis. The editors, H. Birkhäuser of Basle and H. Bloch of New York, have performed a useful service. Two of the articles are in English, two in French, and three in German.

Metabolism and Function (Amsterdam: Elsevier. London: Cleaver-Hume Press. 1950. Pp. 348. 57*s*. 6*d*.).—This book, edited by Dr. D. Nachmansohn and described as a collection of papers dedicated to Otto Meyerhof on his 65th birthday, is an attractively bound reissue of the first 348 pages of *Biochimica et Biophysica Acta* (1950, vol. 4). Such unity as it has derives from the fact that the contributors are past or present co-workers of Meyerhof's, or have been stimulated by the work of this versatile man. However, Meyerhof's own interests are so wide that there is as much variety in this volume as might be expected in a normal issue of the journal. The first section, on Muscle, includes 7 papers, then follow 6 on Nerve and 3 on Drug Action; and the fourth section, headed Intermediate Metabolism, contains 22 contributions on various aspects of animal, plant, and microbiological chemistry. The more general articles include A. V. Hill's Challenge to Biochemists, with which the section on muscle opens, and von Muralt's interpretation of the development of muscle chemistry as a lesson in neurophysiology. Nachmansohn has contributed an interesting paper on the relation of permeability to axonal conduction and synaptic transmission, arguing that acetylcholine is concerned primarily in the former. Wald writes of the interconversion of retinenes and vitamins A. Krebs has sought to correlate tissue metabolism with body size in a range of animals from mouse to horse, and incidentally includes a useful table of what is known of the composition of human plasma.

WHENEVER THE CALL IS FOR EXTRA PROTEIN



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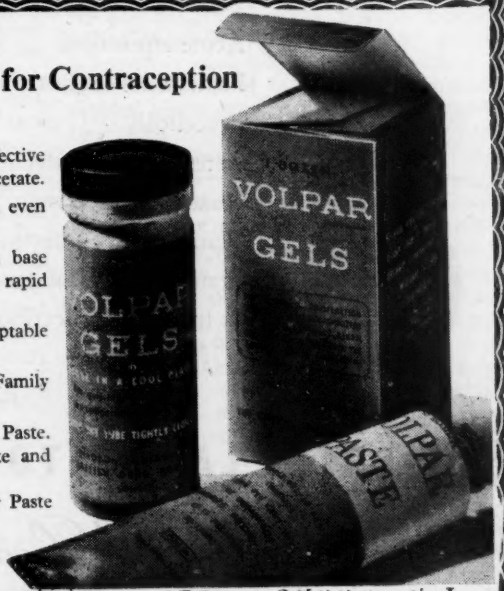

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THE LANCET
LONDON : SATURDAY, DEC. 16, 1950

Liquefaction of Exudates

IN the old pre-antibiotic days the clinician treating empyema had to depend on the formation of fibrinous and later fibrous adhesions between visceral and parietal pleura to obliterate the abscess cavity and extirpate the infection. This was achieved only at the cost of some permanent fibrosis with impairment of lung movement. The advent of effective antibacterial agents has profoundly changed the outlook. Now that the infection can readily be controlled with penicillin or some other agent the deposition of fibrin is an actual disadvantage, not only because of the late effects of fibrosis but because the drug cannot make contact with bacteria enmeshed in a fibrinous network. That is why various methods are being tried to combat the formerly essential process.

One method, already reviewed in these columns,[1] is that of TILLETT and colleagues,[2] using two enzymes produced by hæmolytic streptococci of group A and some other groups. These are streptokinase, or SK, which reacts with globulin in plasma or exudate to become actively fibrinolytic, and streptodornase, or SD, a deoxyribonuclease able to liquefy the stringy fibrils of nucleoprotein, derived from dead leucocytes, that are largely responsible for the viscosity of pus. The effects of injecting these enzymes into the pleural cavity have been studied by JOHNSON,[3] who has demonstrated that they can cause the disappearance of extracellular deoxyribonucleic acid and degenerating cell nuclei from purulent exudates without interfering with the activities of living leucocytes. He ascribes the clumping of leucocytes in pus to their being caught in a matrix of nucleoprotein, since the clumps disintegrate on the addition of deoxyribonuclease. SK has proved its value in major thoracic surgery by making large hæmatomas liquid enough to be aspirated; and SD's assistance in the sterilisation and aspiration of abscesses has also been borne out in practice. The two substances have been separated and purified by CHRISTENSEN's [4] method, and their clinical uses are reviewed by BLATTNER.[5] Their toxicity will depend on the purity of the preparations used and the type of lesion treated; in America, the intrapleural injections were followed by transient febrile reactions and only moderate degrees of malaise. At Great Ormond Street, CATHIE has used a somewhat cruder preparation of SK (presumably containing SD),[6] mixed with streptomycin, for intrathecal injection in children with tuberculous meningitis. His preliminary results [7] were encouraging, and in this issue (p. 784) he and Dr. MACFARLANE bring their experience up to date. Altogether, since February, 1947, they have treated 60 cases. The 20 who formed their first series received streptomycin only, intramuscularly and intrathecally, and 5 (25%) of these are still alive, 4 with normal cerebrospinal fluid (C.S.F.). The remaining 40 cases were treated with intramuscular streptomycin and intrathecal injections of streptomycin plus SK, 34 of them also receiving intrathecal 'Sulphetrone'; 23 (58%) of this second series of 40 have survived, 17 with normal C.S.F. Credit for the improved results is mainly given to the SK, and CATHIE and MACFARLANE are doubtful whether the addition of sulphetrone had any effect. In their routine course the intrathecal injections were limited to 24 spread over six weeks, but there were individual variations, depending on the response to treatment. They emphasise the importance of giving SK from the beginning, before the fibrin clot becomes organised. In Melbourne, WILLIAMS and BAZELEY [8] have used a highly purified preparation of SK in much the same way. Their material has been given over long periods and in repeated courses without causing any obvious reaction in the theca. The clinical results are not dramatic—of the 9 cases treated, 3 seem likely to survive, compared with 5 of the 27 treated before the addition of enzyme was started—but nevertheless, the method is thought to deserve further trial.

Last week (p. 739) ARMSTRONG and WHITE reported their work on deoxyribonuclease obtained from ox pancreas. They explained the tendency for the deoxyribonucleic acid (or the nucleoprotein) to undergo polymerisation and to take the form of fibrils or rods; and they showed that the viscosity of thick purulent sputum is due to these fibrils, which stain by the Feulgen method like cell nuclei. They described the isolation of the enzyme, D.N-ase, from ox pancreas, 10 kg. of which yielded 2·5 g. of dry enzyme. Large intravenous and intratracheal injections of D.N-ase into rabbits caused no toxic symptoms, but later the rabbits' serum developed precipitins capable of inhibiting much of the enzymic activity. In vitro, the D.N-ase activity was very high, and the fibrils in smears of sputum were liquefied leaving living leucocytes unchanged. The preparation was given as an inhalation spray to patients with purulent sputum, and it produced the expected liquefaction, the volume of sputum increasing at first and then lessening. Injections of the solution into an empyema cavity successfully liquefied the exudate. In its potency and freedom from toxicity this seems to be a preparation of great promise, and its cost should not be prohibitive.

With the same objects of liquefying purulent material and securing better contact between antibiotic and bacterium, GRACE and BRYSON [9] in New York have for some years been advocating the addition of a detergent to solutions of penicillin in the local treatment of chronic osteomyelitis. Systemic penicillin is given at the same time. They insist that in such cases surgery should be limited at most to excision of the sinus track and drilling of the bone to permit the insertion of a T-tube into the marrow cavity. Thereafter a solution containing 10,000–20,000 units of penicillin per ml. and 0·1% of a detergent is instilled down the tube four-hourly for ten days or so. There

1. Leading article, *Lancet*, 1950, i, 629.
2. Tillett, W. S., Sherry, S., Christensen, L. R., Johnson, A. J., Hazlehurst, G. *Ann. Surg.* 1950, **131**, 12.
3. Johnson, A. J. *J. clin. Invest.* 1950, **29**, 1376.
4. Christensen, L. R. *Ibid*, 1949, **28**, 163.
5. Blattner, R. J. *J. Pediat.* 1950, **36**, 827.
6. Cathie, I. A. B. *J. clin. Path.* 1949, **2**, 73.
7. Cathie, I. A. B. *Lancet*, 1949, i, 441.
8. Williams, S., Bazeley, P. L. *Med. J. Aust.* 1950, ii, 690.
9. Grace, E. J., Bryson, V. *Surg. Gynec. Obstet.* 1950, **91**, 333.

can be little doubt that the detergent assists in the disintegration of pus, blood-clot, and other debris, and its action may be like that of D.N-ase. The suggestion that it also assists the drug to penetrate deeper into infected bone and thus sterilise it is harder to support. The irritant action of the detergents is said sometimes to impede treatment, but further information on this point is needed. It would also be valuable to have a control series, operated on by the same hands and treated by the same technique but with streptomycin (to control resistant bacteria) instead of the detergent. Without some such controls the part played by the detergent must remain uncertain, which is unfortunate since it would presumably be the cheapest of the liquefying agents.

Finally, there is a summarised report [10] from New York on the use of highly purified crystalline trypsin, prepared in the Armour Laboratories. Dr. REISER and his colleagues told the recent congress of the American College of Surgeons, according to the report, that they have washed out the cavity in tuberculous empyema with a solution of trypsin daily for seven to ten days, and that all pus, debris, and caseous material can then be aspirated, leaving the walls of the cavity clean and sterile. How many cases have been treated is not stated. An announcement from Armour Laboratories shows that the preparation is expected to be of value, like D.N-ase, in cleansing infected areas such as lacerated wounds, bronchi, and sinuses. In view of the well-known sequelæ of pancreatic fistula it seems remarkable that normal tissue escaped damage, but further reports will be awaited with interest.

These investigations, though still in their infancy, offer real hope of improvement in the methods for dealing with hæmatoma and local infection. Not only may they bring susceptible organisms and antibiotics better into contact, but the outpouring of fresh serum and leucocytes which follows the removal of stale exudate can be a valuable aid against some of the gram-negative bacilli which are often resistant to antibiotics. But clinicians should remember that the enzymes mentioned are antigenic and may give rise to sensitisation. Moreover, as PARISH [11] points out, fibrin has its uses, and its removal in the immediate postoperative period might lead to hæmorrhage or to leakage from a sutured viscus.

The Colombo Plan

"The Colombo Plan for Coöperative Economic Development in South and South-East Asia," [12] prepared by a Commonwealth consultative committee including representatives of the governments of Australia, Canada, Ceylon, India, New Zealand, Pakistan, and the United Kingdom, was presented to Parliament by the Chancellor of the Exchequer last month. It begins by summarising the present economic position of all the countries in the region, whether they belong to the Commonwealth or not. In general the great havoc wrought by the war has been made good, but no more. Thus in 1949 the production of rice, wheat, and sugar was approximately the same as before the war; for fats and oils, recovery is also nearly complete. Rubber, petroleum, and tea production are well beyond what they were in 1939, but jute and cotton supplies show no signs of rising from low war-time levels. Pre-war rates of production, however, cannot even maintain the low pre-war standards of living and poor health records; for the population of this region grows at the rate of 20,000 persons a day. At this rate of increase, the present 570 million inhabitants of the area will have become 720 million by 1970; and if these new citizens of the world are to have a life worth living, the supplies both of foods and of other raw materials must be greatly raised. This demands the application of new scientific techniques, on a grand scale, to the age-old problems.

The Colombo plan describes development schemes already drawn up in India, Pakistan, Ceylon, Malaya, and North Borneo, and discusses their finances. A capital investment of £1868 million is needed between 1951 and 1957. Of this sum, 32% is wanted for agricultural purposes, 34% for transport and communications, 16% for industry, fuel, and power, and 18% for social and health services. The schemes cover a wide variety of purposes, but the most important are some ten huge new river dams by means of which it is hoped to irrigate 13 million acres of land and increase electric generating capacity by 1·1 million kilowatts (67% of the total present capacity). These two figures give some conception of the potential wealth in these countries. For realising the schemes, not only capital but also expert knowledge is required, and a table lists the categories of 1300 technical experts who will have to be brought from overseas. The greatest shortage is of mechanical and water engineers, and the report lays stress on the importance of these experts for the future of our civilisation. Among a variety of specialists, the list includes 80 doctors. Most of these are needed to fill temporary appointments for one or two years; and clearly they will have to be men and women of established professional reputation. It is to be hoped that medical schools and hospitals in this country will enable members of their staffs to take up such temporary appointments without loss of prospects on return home. The scheme also involves sending many doctors, nurses, and social workers abroad for postgraduate training. Thus the Indian government's plan includes overseas training for more than 1100 medical workers; Pakistan hopes to be able to send 50 nurses abroad for two or three years each; and Ceylon plans to send out 30 doctors a year for postgraduate training. If Great Britain is to maintain her present position as a centre for such training, at least a proportion of our teachers must be familiar with the social and economic background against which such students will be working when they go back to their homes.

Throughout the report there is emphasis on the necessity of the new ventures in order to promote health and combat disease. But the overwhelming practical consideration is, of course, finance. Of the £1868 million of capital, it is estimated that the countries themselves can subscribe no more than £783 million; sterling balances will provide a further £246 million, but the remaining £839 million must come from other sources: it is suggested that these may be either private investors, the International Bank

10. *New York Times*, Oct. 25, 1950.
11. Parish, H. J. *Lancet*, 1950, i, 736.
12. Cmd. 8080. H.M. Stationery Office. Pp. 101. 3s. Also a popular illustrated summary (New Horizons in the East). Pp. 40. 1s.

for Reconstruction and Development, or governments outside the area. Indeed it is proper to describe the report as a prospectus advertising for subscribers to this £839 million loan. But the prospectus is peculiar in that there is no promise of financial dividends. In fact, the word dividend does not appear in the report, and obviously the returns will not be measureable only in rupees, pounds, or dollars, but mostly in more abstract assets. The final sentence in the report is: "In a world racked by schism and confusion it is doubtful whether free men can long afford to leave undeveloped and imprisoned in poverty the human resources of the countries of South and South-East Asia, which could help so greatly, not only to restore the world's prosperity, but also to redress its confusion and enrich the lives of all men everywhere." In all the great problems of South-East Asia, economic factors, moral values, and the state of the public health are intimately interwoven. The Colombo plan calls on men and women throughout the British Commonwealth and in Europe and the Americas for financial sacrifices in order to "enrich the lives of all men everywhere." This is a noble aim: the evidence submitted suggests that it can be attained by full application of new scientific knowledge, provided this is not hampered by too much old-fashioned human wickedness.

The Tuberculosis Service

"The inadequacy of the present provision for the diagnosis, treatment and aftercare of tuberculosis is a national scandal . . . ."

WITH this round shot the Tuberculosis and Diseases of the Chest Group Committee of the British Medical Association open a report, recently approved by the B.M.A. council, on tuberculosis and the National Health Service. At the end of last year there were 11,000 patients awaiting admission to the 23,000 beds provided for treatment, and there is no reason to suppose that the situation has since changed spectacularly for the better, though the Minister of Health recently stated that the general hospitals have now been responsible for "a very large increase in the number of beds." Though mortality from the disease continues to fall, contacts multiply, and notifications are rising. The Ministry of Health, the committee believe, clearly intend that the existing tuberculosis arrangements should be expanded into a branch of medicine dealing with all diseases of the chest; but this plan has been handicapped so far by the segregation of the tuberculosis service from other medical services. The chest clinic, the committee rightly insist, must be linked with the hospital. Again, prevention, social welfare, and aftercare of tuberculous families, though they are the responsibility of the local authorities, are duties which the committee find inseparable from the work of the chest physician; he should undertake them on behalf of the local authority, working as a consultant in close collaboration with the medical officer of health.

The chest clinics will have to be built up from the present dispensary service, and "many tuberculosis dispensaries, especially those which are part-time, have no X-ray equipment, no access to the basic services of a general hospital, and are inadequately housed in converted dwelling-houses, local government offices, and the like." Unequipped visiting stations of this kind, the committee think, should be retained only for special purposes—e.g., for interviewing in rural areas. Chest clinics proper should be associated with general hospitals, and established in some sanatoria. Large full-time chest clinics, with a permanent specially trained auxiliary staff, already exist in some hospitals. The committee suggest that the establishment of part-time chest clinics in smaller hospitals may upgrade such hospitals and enable them to offer specialist services previously available only at distant larger hospitals. They do not mention the cost of such upgrading of hospitals, but it must be borne in mind that all expenses incurred to improve care of the tuberculous must be saved from the cost of other activities in the health service. It is right and necessary that such concessions should be made to a body of patients whose need is so great; but it is unlikely that those working in other branches of medicine will hurry forward with proposals for reducing their own outlay. The responsibility for redistributing funds so as to allow of the expansion of the tuberculosis service lies fairly and squarely on the regional hospital boards.

The committee judge that in an urban area the optimum size of population to be served by a chest clinic is 200,000; in country districts the number would be less. This estimate agrees with that made by the Scottish Joint Subcommittee[1] last July. Both bodies thought that in compact urban areas with good public transport it is better to have one central fully equipped clinic than a number of minor ones. Such a clinic, the B.M.A. committee find, will need to take at least 5000 radiographs a year; and this means there must be an X-ray department in the clinic itself. Consulting and treatment rooms should be equipped for fluoroscopy. Small part-time clinics should use the X-ray department of the hospital to which the clinic is attached; but the committee suggest that the radiologist should be willing to leave routine reporting on these films to the chest physician. A chest clinic serving a population of 200,000, they say, would need a consultant and two assistant chest physicians, with an appropriate staff of registrars, an almoner, 5 health visitors and clinic nurses, and 5 clerks. Apart from any wards for the treatment of tuberculosis in general hospitals, there should also be some beds for diagnosis and assessment; and where possible these should be associated with a thoracic surgery unit. Each chest physician should control some of these beds in a general hospital. The development of chest clinics in general hospitals should make it easier for chest physicians to collaborate with their other specialist colleagues, and particularly the thoracic surgeon. Such arrangements, though they would give the chest physician a much firmer footing in the hospital than he has at present, are hardly the equivalent of the chest units envisaged by the Scottish subcommittee as "designed to include both the hospital and dispensary aspects of the service, and served by a single integrated staff."

The B.M.A. committee put the bed requirements for pulmonary tuberculosis at 1 per 1000 population,

1. Tuberculosis Service in Scotland. Report of a Subcommittee appointed jointly by the Central Consultants and Specialists Committee in Scotland, and the Tuberculosis Society of Scotland. *Brit. med. J.* 1950, ii, 61.

which is somewhat lower than the Scottish estimate. The Scottish subcommittee thought that many of the beds required could be provided in hospitals for infectious diseases, but the B.M.A. committee hope rather for the provision of more beds in general hospitals, and for the reopening of more sanatorium beds. This last depends on better nursing recruitment. Well-planned propaganda, they believe, would present tuberculosis as an urgent national problem; and the interest of nurses could be aroused by teaching them something of modern achievements in treatment. Student nurses should have the opportunity of working in approved sanatoria or chest hospitals as part of their training. Even more important are proposals that trained or untrained nurses suffering from tuberculosis should be thoroughly reabled; that living quarters and amenities for resident staff should be of the highest order; and that there should be some form of effective representation of sanatorium nurses on the General Nursing Council.

Prevention, care, and aftercare, which are the responsibility of the local authorities, are inseparably linked with treatment; and though clearer division of duties by regulation is necessary, the chief need is collaboration between people. The things to be done, regardless of who is to do them, are close supervision of notifications, health education of the public, the development of assisted housing schemes, mass radiography, control of milk-supplies, B.C.G. vaccination, examination of contacts, aftercare and help for the family, the provision of home-helps, and reablement. There is plenty here to keep both the clinical and the public-health teams fully occupied; and to get through it they must work well together.

Annotations

VAGARIES OF HERPES ZOSTER

HERPES ZOSTER characteristically affects the posterior root ganglia; but commonly the nervous system is more widely involved.[1] There may be mild localised leptomeningitis with lymphocytic infiltration, inflammatory changes in the posterior and anterior horns of grey matter at the level where the spinal ganglia are affected, or peripheral mononeuritis both in the sensory nerves distal to the ganglion and also in the corresponding anterior root. These changes may be reflected in mild meningeal irritation with an excess of lymphocytes in the cerebrospinal fluid and occasionally by a lower-motor-neurone palsy involving muscles supplied by the anterior roots corresponding to the affected posterior-root ganglia.[2] This palsy is found most often with zoster in the 5th and 6th cervical segments, when weakness of the shoulder-girdle muscles appears with, or a few days after, the herpetic eruption; but with a lower dorsal zoster the anterior abdominal muscles may be paralysed, while with zoster at the level of the 2nd and 3rd lumbar segments the quadriceps femoris is paralysed. As to the cranial nerves, herpes zoster otiticus, or the Ramsay Hunt syndrome,[3] is relatively common; here the vesicles are often in the external auditory meatus, sometimes spreading on to the pinna, and are accompanied by a peripheral facial palsy and possibly by labyrinthine disturbance. Ramsay Hunt ascribed the facial palsy to involvement of the geniculate ganglion by zoster, but he had no supporting pathological evidence; and Denny-Brown,[1] in a detailed pathological study of a case, found no changes in the geniculate ganglion but patchy infiltration with lymphocytes throughout the course of the facial nerve—a motor mononeuritis such as may occur in spinal anterior roots. With ophthalmic zoster also, spread of the infection to neighbouring nerves is occasionally evident; there may be partial oculomotor palsy, while rarely unilateral optic atrophy is a complication. Unilateral paralysis of the palate, pharynx, and larynx [4] may be an accompaniment of zoster vesicles on the posterior wall of the pharynx and larynx. Much less commonly, the central nervous system is extensively involved: encephalitis [5] has been reported, the herpetic rash preceding the onset of cerebral symptoms by some days or even weeks; and diffuse myelitis apparently due to zoster has been described.

The evidence that the viscera may be involved is not so clear. The best-authenticated cases are those with urinary symptoms. Oppenheim [6] described transient paralysis of the bladder associated with sacral zoster; while Dubois [7] reported a case with herpetic lesions on the left buttock associated with urinary frequency and dysuria and finally retention of urine, in which cystoscopy revealed typical vesicles on the left side of the base and on the left lateral wall of the bladder. Furthermore, cases in which the bladder was very probably involved have been recorded by Durget [8] and by Chesterman.[9] Zoster of the pleura seems the probable explanation of the clinical picture in Russell Brain's [10] patient, in whom zoster affecting the 5th and 6th dorsal segments on the left side was accompanied by severe pain on breathing and a harsh pleural rub exactly under the area of the cutaneous eruption. That zoster may attack the abdominal viscera is less certain; but Ryle [11] suggested this possibility in a case of duodenal syndrome accompanying zoster in the distribution of the 3rd and 4th dorsal segments; and in the case described by a correspondent on p. 822 the colon may well have been involved though abdominal symptoms did not start until a month after the herpetic vesicles appeared. The probable explanation of visceral involvement is that the virus travels down the autonomic nerves supplying the viscera, as it is thought to travel down sensory nerves to the skin.

These accounts suggest that with obscure neurological disease, and particularly with unexplained localised lower-motor-neurone lesions, the possibility of zoster should be considered, the mode of onset investigated, and search made for herpetic vesicles or their scars.

1. Denny-Brown, D., Adams, R. D., Fitzgerald, P. J. *Arch. Neurol. Psychiat.* 1944, **51**, 216.
2. Parkinson, T. *Brit. med. J.* 1948, i, 8.
3. Hunt, J. R. *J. nerv. ment. Dis.* 1907, **34**, 73.
4. Engstrom, H., Wohlfart, G. *Arch. Neurol. Psychiat.* 1949, **62**, 638.
5. Krumholz, S., Lukan, J. A. *Ibid*, 1945, **53**, 59.
6. Oppenheim, H. Text-book of Nervous Diseases. Edinburgh, 1911.
7. Dubois, F. E. *J. Urol.* 1926, **15**, 583.
8. Durget, R. *J. Urol. méd. chir.* 1929, **8**, 62.
9. Chesterman, C. C. *Brit. med. J.* 1932, i, 563.
10. Brain, W. R. *Ibid*, p. 632.
11. Ryle, J. A. *Ibid*, p. 726.

SAVELOYS ET AL.

OF 191 outbreaks of food-poisoning in the years 1945–48 whose origin could be traced with some certainty almost half were due to made-up or processed meat; the number due to fresh meat was negligible. The recently published report [12] of a working party set up by the Minister of Food to consider present practices in the manufactured-meat trade and advise on possible improvements in hygiene is therefore timely, and it includes some suggestions of interest to the profession as a whole.

The proposals are divided into suggested amendments to the law and regulations and a "code of practice" to be adopted voluntarily by the trade. Manufactures of this kind are regulated by sections 13 and 14 of the Food and Drugs Act, 1938, and it is not surprising that

12. Ministry of Food. Report of the Manufactured Meat Products Working Party. H.M. Stationery Office. 1950. Pp. 48. 1*s.* 3*d.*

twelve years' experience has shown that the bulwarks of the law need strengthening here and there and that there are open loopholes not seen by those who framed it. Perhaps the most daring proposal, at a time when each north wind brings us fierce and Doric complaints of "Whitehall government," is that these sections of the Act shall be extended to Scotland. We hope that this advice will be followed and that medical officers of health north of Hadrian's wall will find them as useful as do their colleagues here. But it is the suggested code of practice that is likely to have most effect in improving the hygiene of a trade in which bacterial contamination is only too easy.

Of 66,830 manufacturers, only just over 1% can be classified as large-scale enterprises, and it is the general experience that these show a laudable ambition to produce goods of the best possible hygienic standard. The smaller firms—bakers, pie-makers, and butchers—may equal the best of their larger competitors; but often, in fact, they fall behind. They lack staff with specialised skill, the equipment which obviates the handling of food, space to work, and, above all, knowledge of what can and should be done to avoid infection of these vulnerable foods. We suspect too that the fear of a civil prosecution for damages following food-borne infection lies less heavily upon them than upon those firms whose names are on every hoarding. The principal problem of the working party was therefore to suggest means of persuading and helping the smaller man to raise his hygienic standards.

Some unsatisfactory features of the trade lend themselves to legal control: premises must be licensed and reach standards of construction which can be defined; domestic animals must be excluded; employees must wear clean overalls. But these rules alone are unlikely to effect much, and it is evident that the risks of contamination of food arise mostly from poor supervision, slovenly habits, and sheer ignorance of what constitutes dirty practices. The problems are those of applied bacteriology, and no honest hygienist would care to draft regulations for universal application with the promise that their enforcement would end the contamination of meat products. But expert knowledge can suggest many improvements in existing custom, and we hope that persuasion and advice to a trade that is eager for self-improvement may lessen what has been a serious risk to the public health. Mr. Badman will always be with us; but the law as it stands can be used to check the more grossly insanitary practices; and, since good hygiene is likely to go with good flavour and attractive appearance, we can expect support from a public which is becoming increasingly particular in its choice. For years legal penalties have been employed in the attempt to enforce cleanliness in the production of milk; but many observers would agree that greater improvement has resulted from the parochial visiting of the National Agricultural Advisory Service and the refusal of the wholesalers to accept sour milk.

Some details in the report deserve further notice. The dangers of gelatin are rightly emphasised. Few things that we eat are better culture media for bacteria, pathogenic and otherwise, and at least one outbreak of staphylococcal food-poisoning extending into several counties has been traced to this source. It can be sterilised by heat, but repeated boiling will spoil its "gelling" properties. Slow cooling of cooked food is recognised as dangerous, since a temperature likely to encourage bacterial multiplication may persist for many hours; and the trade might well promote the design of cheap and effective chilling plant for the small manufacturer and the communal kitchen. Perhaps the part of the report most interesting to doctors is an appendix detailing suggestions by the staff of the Birmingham Accident Hospital for the dressing of small wounds of the hands of those engaged in this and similar trades where soiling and wetting of the hands is unavoidable. It seems worthy of trial among nurses and our own profession.[13]

And lastly we would direct the attention of the sociologist to the extraordinary variety of made-up meat foods which tickle the national palate. Now, gentlemen, what do you choose? Aislet, faggots, haslet, haggis, hog's pudding, or polony?

RADIOSODIUM TREATMENT OF BLADDER TUMOURS

PAPILLARY carcinomas of the bladder have been treated by many methods since Beer introduced diathermy treatment in 1911. Any one method may be effective in a particular type of lesion, for the bladder is pleomorphic in the tumours it produces and no single treatment is likely to suit them all.

A new form of radiation therapy by means of isotopes seems to be remarkably successful in patients with multiple small papillary carcinomas, sometimes called papillomatosis, provided the lesions are still confined to the mucosa and have not yet infiltrated the muscle layers. It is now believed that in this condition the mucosa is in a premalignant state and the multiple tumours are evidence of a multicentric origin. Any treatment, such as diathermy, that is directed against only the obvious manifestations of the disease will therefore be incomplete, and new tumours may be expected to follow. Intracavitary irradiation with an isotope entails the insertion of a thin-walled rubber balloon into the bladder—in men through a perineal urethrostomy; in women per urethram—and subsequent filling of the balloon with a solution of the radioactive isotope (150–200 ml.). With this degree of distension the bladder mucosa is stretched over the surface of the balloon, and a tumour will be pressed firmly against the source of irradiation. The most effective isotope has been radiosodium (Na^{24}) made by irradiating common salt or sodium iodide for a week in the atomic pile. Na^{24} has a relatively short half life, so that apparatus contaminated with it will be safe after a few days. During its disintegration this isotope emits gamma and beta rays, and the quantities used in treatment administer to the tumours a dose of gamma radiation comparable to that from 0·5 g. of radium used in the same way. The mucosa of the bladder receives a high-intensity homogeneous dose, but the intensity rapidly falls as the rays pass through the tissues, and the bladder muscle therefore receives a considerably smaller dose, while the extravesical tissues are scarcely irradiated at all. The duration of treatment is only about three to four hours, during which the bladder mucosa receives about 3000 r in the form of gamma rays and a similar amount as beta rays. At the end of treatment the balloon is removed, and the patient is usually fit to return home within a week. Because of the minimal surgical interference this is a suitable treatment for the elderly and the frail. The rapid falling off in the strength of irradiation prevents undesirable reactions in the skin or rectum.

The late results of radiosodium treatment will not be known until a sufficient number of cases have been followed up, but of the 30 patients treated at the Royal Cancer Hospital[14] in the last eighteen months there are already 17 who are tumour-free, judging by cystoscopy and mucosal biopsy. Complications may arise from underdosage or overdosage. If the dose is too small tumour regression is incomplete or absent and a second insertion of isotope is necessary. Where the dose has been too large the patients develop severe frequency of micturition some four weeks later, and this may persist for several months even when the urine is sterile. In 2

13. Schilling, R. S. F., Roberts, M., Goodman, N. *Lancet*, 1950, 1, 293.
14. Wallace, D. M., Walton, R. J., Sinclair, W. K. *Brit. J. Urol.* 1949, **21**, 357.

patients what seems to be a radionecrotic ulcer on previously healthy mucosa has appeared; both cases had an extremely large dose of irradiation by present standards. There have been no cases of urinary incontinence; and the perineal wound has always healed without delay.

A team of British workers, generously supplied with radioactive material by the atomic energy plant at Harwell, has been responsible for developing this original treatment. It will not be obtainable at every hospital, nor would this be desirable until we know more about the long-term results; and it may be wiser if, for the present, experience is concentrated at the Royal Cancer Hospital. When used in correctly selected patients, it is clearly a valuable treatment in at least one form of bladder carcinomatosis.

HEADQUARTERS FOR POSTGRADUATE FEDERATION

London University is to buy from the Dominion Students' Hall Trust the freehold of a block of property in Bloomsbury, lying on the south side of Guilford Street, on which it is hoped ultimately to build the headquarters of the British Postgraduate Medical Federation. It is appropriate that the new site is near London House, where many of the residents are medical postgraduates from the Dominions.

ANTIBACTERIAL ACTION OF COD-LIVER OIL DISTILLATE

COD-LIVER oil is known to have a bacteriostatic action, and Solomides [1] has increased this considerably by distilling the oil at 250°C at atmospheric pressure and iodinating the product. The distillation is not a simple physical process but is analogous to the "cracking" of petroleum; for the oil decomposes on boiling, some of the long-chained and unsaturated fatty acids or their esters being broken down. The distillate consists of two fractions—the fatty acids, which inhibit the growth of pneumococci, streptococci, and some fungi; and the unsaponifiable fraction, which is germicidal and tuberculostatic. Iodination increases the germicidal activity of the distillate and makes it capable of lysing tubercle bacilli. Admixture with serum and body-fluids does not affect its action on tubercle bacilli but weakens its germicidal action. Solomides has made the distillate injectable by means of emulsifying agents, such as 'Tween 80,' and the emulsified product is said to be practically non-toxic and not liable to cause local reactions. Solomides reports good results with local applications of the iodised distillate in 50 obstinate cases of eczema, and in patients with burns and mycoses; but he does not mention any control observations. The product's tuberculostatic action was confirmed in guineapigs, though the differences between treated and untreated animals was not spectacular. The dosage had to be judged very carefully; for the infected animals improved when treated with 0·01 g. of emulsified iodised distillate daily for a month, but double this dose seemed to hasten their death from tuberculosis. The intradermal tuberculin test gave a negative or feebly positive result in tuberculous guineapigs which had been injected with 0·001 g. of distillate daily for 3–4 weeks. Work on the same lines has now been reported by Emmerie and his colleagues,[2] of Utrecht, who have found the unsaponifiable fraction strongly tuberculostatic in vitro but disappointing in vivo when tested in guineapigs. Solomides' clinical results with injections of the distillate in tuberculosis are not impressive. He does not mention the total number of patients treated, the radiological appearances, or the changes in erythrocyte-sedimentation rate. Some patients had a pyrexial reaction shortly after their injections and Solomides suggests that this arises from the liberated tuberculin of dead bacteria.

On the present evidence this cod-liver oil distillate is of more academic than clinical interest. It has yet to be shown to have any beneficial effect in human tuberculosis, and the guineapig tests show that it is a double-edged weapon, since increasing the dose may exacerbate the infection. In local treatment it does not seem to have any advantages over the antibiotics.

1. Solomides, J. *Ann. Inst. Pasteur*, 1950, **78**, 227.
2. Emmerie, A., Engel, C., Klip, W. *Nature, Lond.* 1950, **166** 78

CAT-SCRATCH AND TULARÆMIA

HUMAN infection with *Pasteurella septica* is now a recognised sequel to bites by cats and other animals which carry the organism in their mouth or respiratory tract. Such infections usually have a sudden onset with swelling and redness of the injured area followed by a benign course, but sometimes the inflammation persists a long time and osteomyelitis may be discovered after the initial lesion has healed.

Cats are thought to be the source of another infection, known in France as "la maladie des griffes de chat." Debré and his colleagues,[1] who have seen several cases, describe an example in a girl of six, who developed a small tender swelling in the groin without any other lesion in the limbs or perineal region. Despite treatment with penicillin the lump grew and the skin over it became discoloured and adherent. Aspiration produced pus, from which no organisms could be grown on the various culture media tried. The girl's Frei and tuberculin skin tests were negative, but an intradermal test with an antigen prepared from the pus of a similar case was strongly positive. The abscess discharged for some days but responded fairly rapidly to 'Aureomycin.' The child had no history or sign of claw marks, but she habitually played with cats at home. This case is typical of many seen recently in the country round Paris. The lesion is a subacute suppurative lymphadenitis involving one or several nodes and leading to an abscess which may reach 2–3 inches in diameter. There is little general reaction except for mild fever and sometimes a leucocytosis, though Weill and Lévy [2] have noted enlargement of the spleen in one case.

This condition seems to be distinct from the infections with *Past. septica*, but so far bacteriological and mycological examinations have not revealed its cause. Virus infection is a possibility, especially as cats and mice are often infected with viruses of the psittacosis-lymphogranuloma group. Another explanation is put forward by de Lavergne and colleagues [3] in their clinical review of the first epidemic of tularæmia in France. They point out that cat-scratch infection resembles one of the varieties of tularæmia, and the skin-test antigen prepared from cat-scratch pus has produced a positive reaction in several proved cases of tularæmia. It is known that cats occasionally harbour *Past. tularensis*, but in the case reported by Debré et al. the child's agglutination test for tularæmia was negative. Application of this test in other cases of cat-scratch should quickly determine whether the two conditions are related.

CHRISTMAS

AT a time when the rise of prices makes it harder and harder to make ends meet, the Christmas gifts which the Royal Medical Benevolent Fund sends to its beneficiaries are more welcome than ever. Contributions, marked Christmas Gifts, will still be gratefully received by the fund at 1, Balliol House, Manor Fields, London, S.W.5.

1. Debré, R., Lamy, M., Jammet, M. L., Costil, L., Mozziconacci, P. *Bull. Soc. méd. Hôp. Paris*, 1950, **66**, 76.
2. Weill, J., Lévy, P. *Ibid*, p. 967.
3. de Lavergne, V., Pierquin, J., Helluy, J., Dornier, R. *Sem. Hôp. Paris*, 1950, **26**, 3978.

Special Articles

PROVISION OF SPECIALIST SERVICES IN REMOTE AREAS

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IN Scotland, particularly in the West and in the North, there are many areas which, because of their remoteness or inaccessibility, present special problems in the provision of specialist services. Obviously, if the patient cannot go to the specialist, the specialist must go to the patient, and over the past decade this has been accepted as a guiding principle.

For some years before the introduction of the National Health Service, these areas—especially the North-West of the Scottish mainland, and the Western and Northern Islands—had specialist services provided by their local authorities and by the Highlands and Islands Medical Service. In some areas the service was already substantial, and in 1948 the over-all picture was one of continuous development. Fresh ground was being broken, and existing specialist care was being augmented.

BACKGROUND AND BEGINNINGS

In these remote districts the local population has only within comparatively recent years become accustomed to turn to the general practitioner for the treatment of minor ailments. In the past, a boy might grow to manhood without having seen a doctor within the boundaries of his native parish, unless there had been some disaster such as an outbreak of cholera or of enteric fever. To this day much discretion is used before summoning medical aid.

The inter-war years saw the gradual development, under the ægis of the Highlands and Islands Medical Service, of comprehensive general-practitioner arrangements, and by 1939 no area was without regular medical help, though its provision might tax the endurance and resources of the general practitioner to the utmost. A visit to a patient was often an expedition to be planned carefully with due regard to local knowledge of weather and tides, and carried out by such varied transport as lifeboats, fishing vessels, and hill ponies. Many a good tale lies hidden between the lines of a statement of travelling expenses with such items as so many "horse," "foot," and "water" miles. If the problem of getting to a patient was formidable, that of getting back was sometimes insoluble, at least immediately. A comprehensive medical service was no new term to these practitioners. I well recall one whose habit it was to make a microscopical examination of the cerebrospinal fluid before sending a patient with suspected meningitis to hospital. Most of them had to be, and in fact were, first-class general practitioners. Of necessity they were themselves the only medical specialists available to the remote areas.

In districts where small hospitals were set up the doctors in their vicinity were encouraged to become proficient in some specialty; and in many areas it became customary for one practitioner to undertake all the emergency surgery and also a good proportion of the cold surgery. The patient's own doctor usually gave the anæsthetic, but here again was an opportunity for a general practitioner to gain recognition among his colleagues for special skill. Occasionally, a patient who was fit enough to travel would make the long and tedious journey by road, rail, or sea to consult a specialist or to be admitted to one of the large city hospitals for investigation or operation. Less often, a specialist would journey to the patient, and perhaps operate in the cottage hospital. Medical, surgical, or obstetrical emergencies were seldom moved to the large centres and most of them were treated by the general practitioner at the cottage hospital with the help of one or more of his colleagues.

BASIC APPOINTMENTS

The next step in the development of local specialist services was the appointment of a surgeon to strategically situated cottage hospitals. This specialist, who held a higher surgical qualification, lived in the area but did not engage in general practice. Besides undertaking all the emergency and general surgery of the neighbourhood, including orthopædics and gynæcology, he was usually competent in the management of obstetrical emergencies, and often acted as medical consultant also. Anæsthetics continued to be administered by the general practitioners, and such in the main is the practice at present. The installation of small X-ray sets made still further calls on the versatility of the local surgical specialist. Today many of these appointments cannot, and do not, provide full-time work, but they are completely justified because the surgeon must be available at all times. He is an insurance against medical catastrophe.

In assessing the need for specialist services, it quickly became clear that a local appointment could be justified only for general surgery—and that only on grounds of emergency. Otherwise the population in any one area was not big enough to provide enough work for a whole-time specialist. On economic and professional grounds, therefore, all the other specialist services had to be organised on a part-time or visiting basis.

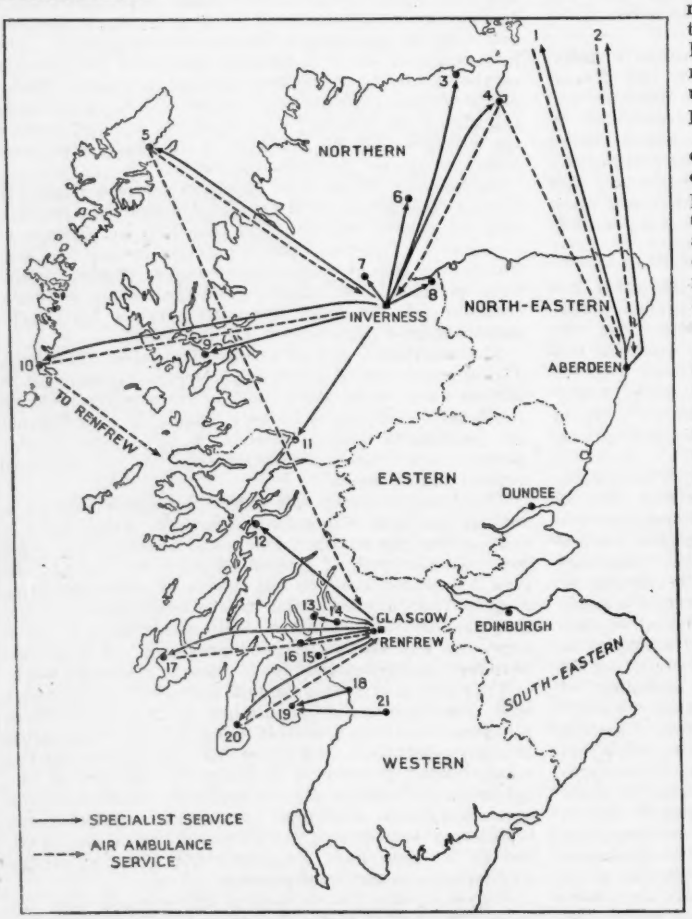
The anæsthetic service presented peculiar difficulties. The appointment of a visiting specialist anæsthetist is seldom worth while, since much of the anæsthetics work is related to emergency surgery, which has to be carried out at remote places at short notice; and, consequently, most cases are undertaken by one or more general practitioners.

The basic problem was solved by appointing to a cottage hospital a competent surgeon, which gave a sense of security to practitioners and people alike. Free from the anxieties of general practice, he was able to give his whole time to his specialist responsibilities. Regular outpatient clinics were established at the hospital, operating-theatre and ward fabrics were improved and equipment was provided. More nurses were recruited to deal with the increase in specialised work.

The amount of work a surgical specialist can do varies with the density of population in his area. Mere numbers are seldom a reliable index, for the ruling factor is always distance; and the sparser the population the more difficult it becomes to make the services of one specialist available to all. In Scotland, where travelling is often difficult, a surgical specialist in a remote area is seldom able to serve a population of more than 30,000, though he may have long intervals when by urban standards he is not hard-pressed.

The next step in extending the services was the appointment of a part-time general medical specialist who visited the area regularly and held outpatient clinics at the cottage hospital to which the general practitioners referred their patients. He was also available for consultation in the homes of patients who were unable to attend the clinic. How often he went was determined by a process of trial and error. Beginning at one session per month, the interval was lengthened or shortened according to the amount of work, which he came to be able, more or less, to estimate. Experience has shown that, for a population of 20,000, one whole day is required per month, exclusive of travelling time. Apart from acting as consultant, the visiting physician is a valuable link between the remote area and the larger centre at which his major appointment is naturally held. During his peripheral visits, arrangements are made for the

admission of patients to the central hospital, usually to a unit under his care, for investigation and treatment beyond the scope of the outlying cottage hospital. This personal link does much to lessen for many patients the fear of the long journey to a large town and to a strange hospital, especially if, soon after admission, the patient sees again the doctor who was first consulted in more familiar surroundings. If at all possible, this sequence should not be broken. Between visits the general practitioners can make contact with the physician by telephone, and in emergency receive advice, or arrange for the immediate admission of a patient. Emergency visits can occasionally be paid to the area by the physician; but they are time-consuming and transport is often difficult.



1. Kirkwall, Orkney: Balfour Hospital (19 beds) res. surg.
2. Lerwick, Shetland: Gilbert Bain Memorial Hospital (40 beds) res. surg.
3. Thurso: Dunbar Hospital (36 beds) res. surg.
4. Wick: Bignold Hospital (28 beds) res. surg.
5. Stornoway: Lewis Hospital (57 beds) res. surg., res phys.
6. Golspie: Lawson Memorial Hospital (26 beds) res. surg.
7. Dingwall: Ross Memorial Hospital (24 beds).
8. Nairn: Town and County Hospital (21 beds).
9. Broadford: Mackinnon Memorial Hospital (8 beds).
10. Daliburgh: Bute Hospital (10 beds).
11. Fort William: Belford Hospital (30 beds) res. surg.
12. Oban: West Highland Cottage Hospital (28 beds) res. surg.
13. Dunoon Cottage Hospital (12 beds).
14. Greenock.
15. Millport: Lady Margaret Hospital (14 beds).
16. Rothesay: Victoria Hospital (20 beds).
17. Bowmore.
18. Irvine: Central Hospital (maternity) (82 beds) obstetrical specialist service.
19. Lamlash: War Memorial Hospital (18 beds).
20. Campbeltown Cottage Hospital (14 beds).
21. Ballochmyle Hospital (888 beds) general specialist service.

(The bed figures are those given in the Scottish Hospital's Survey, 1946.)

EXTENDING THE SERVICE

The appointment of a part-time visiting obstetrician-gynæcologist, and the establishment of a combined antenatal, postnatal, and gynæcological clinic, was the next obvious gap to be filled. The obstetrician-gynæcologist pays regular visits at about the same interval as those of the physician, and extraordinary visits are seldom practicable. Most emergencies can, however, be dealt with locally with the aid of the surgical specialist, or sent to the central hospital. Often they are foreseen by the specialist during his regular visits, and the patient is moved to hospital before danger arises.

The success of these services soon called for further developments. An orthopædic service, for example, must now be regarded almost as an essential, and it requires one visit or clinic session every two months per 20,000 of population. Here again, a sufficient number of beds must be reserved in a central orthopædic unit to honour recommendations for in-patient treatment without undue waiting.

The chief difficulty of setting up an ophthalmological service has been the ever-increasing volume of work. Intended primarily for children of school age, the service, again run on a visiting specialist and clinic basis, was soon called upon to cater for the preschool children and a rapidly expanding number of adults. For a population unit of 20,000, visits of two days per month, seem barely sufficient.

Perhaps an ear, nose, and throat service is the most difficult to establish. The appointment of a visiting otorhinolaryngologist helps only up to a point. Regular outpatient clinics and domiciliary consultations may be held; but, if the service is to be really successful, recommendations for further treatment must be carried out promptly and completely. Major emergencies can be dealt with locally or moved to hospital as in other specialties, but there is difficulty in providing the inpatient and often continuous outpatient treatment which is needed in this specialty. To consider one group of cases alone—children recommended by the specialist for removal of tonsils and adenoids—it is seldom practical to arrange for such large numbers to be admitted to the central hospital unit; and, even if it were possible for the specialist to hold operative sessions locally, there are seldom enough beds at the cottage hospital. One possibility is to use empty beds in the local infectious-diseases hospital. Special operation sessions held in these hospitals would soon reduce the waiting-lists, and the work entailed would be helpful in maintaining the interest of the staff at times when they had few infectious patients.

Nearly all the small general hospitals serving these remote areas now possess X-ray plant. The equipment and, consequently, the service offered vary from the isolated X-ray set, used only for the detection of fractures and dislocations, to the small modern and efficient X-ray department run by a whole-time radiographer and visited regularly by a radiologist. Efficient local X-ray facilities are essential, and they must keep pace and be able to cope with the reasonable demands of the visiting specialists. A

population unit of 20,000 will justify one whole-time radiographer and a regular monthly visit from a visiting radiologist. For radiotherapeutic services the remote area must look to the large centre; but a regular follow-up and report clinic should be established in the periphery, where it would serve a most useful purpose.

The threshold of demand for a mental-health service, certainly in the less obvious cases, is higher in these rural areas—possibly because of environment—than in the more populous centres. Few remote areas have enough work to justify a regular psychiatric service on a visiting basis. There is usually a well-established liaison with a district or city mental hospital, but only too often this is regarded as merely the receiving hospital for certified cases. Domiciliary visits by psychiatrists wherever and whenever possible should be encouraged to promote closer contact between the mental hospital and the general practitioners.

Patients who need plastic surgery and neurosurgery should be referred to a central unit after screening by the local services. The work of the visiting physician will of necessity include pædiatrics, cardiology, and possibly diseases of the chest; but he should be able to refer suitable cases to the appropriate central departments. Patients with venereal disease should be persuaded wherever possible to accept inpatient treatment at a central unit, returning later for continuing treatment by the general practitioner on a programme mapped out by the specialist.

Finally, there must be available to general practitioners and visiting specialists a complete laboratory service including bacteriological, pathological, biochemical, blood-transfusion, and saline-infusion facilities. Between the central laboratory and the peripheral area there should be a ready line of communication by post, telephone, and telegram.

CONCLUSIONS

At present the scope of specialist services in the North and West of Scotland varies considerably from area to area. In a few remote areas local facilities are still scanty and consist in little more than those afforded by the local surgical specialist; in others a fairly adequate service in the different specialties is offered. Such development is well worth while, for apart from its obvious advantages to the patients and practitioners of the area it will help to relieve the strain on overcrowded and overloaded outpatient departments in the larger centres.

In reviewing or planning the hospital services of a remote area, I would stress the importance of developing first and foremost local outpatient facilities within the small general hospital, even at the expense of local inpatient accommodation. Increased outpatient facilities, and an increase in the number of beds for the chronic sick and long-term illness and tuberculous patients, together with a full visiting specialist service, and an adequate number of beds at the appropriate central hospital units, should be the pattern of planning for the immediate future. There are many areas in Scotland, and no doubt areas in England and Wales, to which these principles could properly be applied.

"... good medical schools have developed the defects of the very virtues for which Flexner argued. He urged them to tie the scientific laboratory and the teaching clinic firmly into the structure of training. The laboratory sciences, then too much subordinated to clinical teaching, now stand too much alone. Their relation to clinical judgment is often left unclear in the student's mind. A good many young physicians have been taught to rely so confidently on laboratory diagnosis that when this fails there is nothing left to do for the patient."—Annual Report of the Commonwealth Fund, 1950.

HEALTH LEGISLATION IN AMERICA

FROM A CORRESPONDENT

American hospital authorities are apparently now in the same confused state of mind concerning health and hospital service as were hospital authorities in Britain immediately after the war. The latter, however, had to consider only two proposals, one providing for the coördination of the municipal and the voluntary hospitals, and the other for the complete transference of all hospitals to the Minister of Health. Moreover, these two proposals made their appearance at different times and were put forward by two different Governments. In America, reports *Hospitals* (July, 1950), the official journal of the American Hospital Association, there are "nearly a dozen other proposals, each based on a different idea" to the original proposal for compulsory health insurance, variously known as the Thomas-Murray-Dingell Bill, the Wagner-Murray-Dingell Bill, and sometimes as the Truman Bill, the Administration Bill, or the Ewing Bill, because of its support by the President and the Federal Security Administration. Some of the new proposals strive to avoid the criticisms made against compulsory health insurance; others are attempts to develop a basic principle into workable legislation.

OUTLINE OF BILLS

The latest Bill (HR 8746) was introduced as recently as June, 1950. It proposes to set up a Federal Health Reinsurance Corporation. By reinsuring the heavier losses for health insurance its proposer believes that it will be possible for local Blue Cross, Blue Shield, and other voluntary plans to give more attractive contracts to subscribers at a reasonable charge which, in the words of the proposer, "should cover the medical economic problem of the nation within a brief space of time without the necessity of bringing the government into the patient-doctor or patient-hospital relationship." The government's contact with the proposal would be confined to the local non-profit insurance associations. Initial financing of this plan would be by a $50,000,000 Treasury appropriation in exchange for capital stock. Each eligible health-insurance plan agreeing to participate would pay in premium charges 2% of the total gross payments received from subscribers. The corporation would pay two-thirds of each claim above $1000 paid out by the plan for any period of 12 continuous months with respect to any individual subscriber. Prepayment plans would thus relax contract limitations and offer broader coverage, knowing that the government would assume financial responsibility for two-thirds of the sum spent in excess of $1000 in catastrophic cases.

S1679 is the original Wagner-Murray-Dingell compulsory health-insurance bill. It provides for simultaneous enactment of a separate tax bill to levy a 3% payroll tax divided equally between employer and employee. The income from this tax would be put into a government trust fund. An additional 1% would be put in from the federal Treasury. This trust fund would be administered by a National Health Insurance Board of five persons, including the surgeon-general of the Public Health Service and the Commissioner for Social Security. The board would divide the trust fund among the States by mathematical formulæ based on comparative need, cost of services, and other factors, the allocation being in five main categories: (1) medical, (2) dental, (3) nursing, (4) hospital, and (5) auxiliary services such as pharmaceutical and radiological. The Bill makes no provision for indigent persons unless the local communities responsible for them pay premiums into the federal fund. An American authority remarks: "the cost of fulfilling this programme would be stupendous and probably far in excess of estimates, although the statistics of the Federal Security Agency aver that they are immune to the errors that have plagued the British in a similar venture."

The Flanders-Ives Bill (S1970) is patterned along the lines of the Health Insurance Plan of Greater New York, which hires its own staff physicians to care for its members and purchases hospital care on a group basis. Loans and grants would be provided to start such plans in communities and areas all over the nation; enrolment would be voluntary; and the premiums would be on the basis of a percentage of the family income. A national "yardstick" would be established, listing all the services that should be rendered by an ideal plan, and in each State the State agency and health council would establish a norm. This norm would indicate the cost of providing "yardstick" services in the State, and each community plan providing all the services listed in the national "yardstick" would be entitled to the State-established norm for the services provided to each subscriber. If the subscriber's income were so low that his contributions, based on a percentage of his income, did not reach the norm, the plan would receive a subsidy from State and federal funds. Opponents to this Bill say that it would be harder to administer than the compulsory health-insurance Bill as, in both, doctors and hospitals would be under pressure to provide their services for prices beyond their control, and not every hospital would be able to provide its usual quality of care at the government-established norm. On the other hand, proponents of the compulsory health-insurance Bill believe this alternative to be the next best thing to their own Bill, one reason being that it requires a majority of the members of governing boards and community plans to be persons who do not furnish health services.

Another Bill (S1106), sponsored by Senator Lodge, proposes that the federal government should pay half the cost of State programmes to provide "certain medical services and medicines, which are standardised in their nature but which, because of their high costs, are not used in many cases in which their use is desirable." Medical aid would include radiological and laboratory diagnostic services, respirators, and drugs. The State would be required to participate financially, and the surgeon-general of the Public Health Service would allocate funds on the basis of demonstrated need. To those who believe that the distribution of health services can be solved by making health care less expensive, this bill has had considerable appeal.

Senator Hart, a dentist, sponsors Bill S2940. This is based on the belief that his professional colleagues must be more liberal in their approach to federal participation in the distribution of health services. His concept is a voluntary health-insurance plan, operated by the federal government, to pay all health-care expenses over $5 a year for families with incomes under $5000. Premiums and policies are to be established by a National Health Insurance Board of five members, including the surgeon-general of the Public Health Service, who would represent the medical profession; representatives of hospital and dental associations; and two representatives of the general public. The entire responsibility for subscription charges, benefits, and administration would be handed over to this board. The Bill also proposes to establish a Department of Health, grouping under it all of the present health functions of the federal government.

The Taft Bill (S1581) proposes federal grants-in-aid to State-devised programmes to make medical, dental, and hospital care available to persons unable to pay the whole cost. The Bill does not specify the method by which this could be achieved. In his own words, Senator Taft says: "I suppose my Bill would help a State programme of compulsory health insurance if the State wants it. But this is for the State to decide. The federal government should not impose an arbitrary pattern." The Bill offers general assistance (up to 25% of the cost of the State programme) for development of voluntary non-profit health-insurance plans; establishment and staffing of diagnostic facilities; and inducements to physicians and dentists to practise in low income areas.

S1456, the Hill Bill (known also as the Voluntary Health Insurance Bill), aims to encourage all self-supporting people to use voluntary health insurance, such as Blue Cross, for protection against the emergency cost of illness. It requires federal and State governments to permit payroll deductions for employees wishing to enrol in non-profit prepayment plans, and it would assist States in programmes to discover how the government might assist in extending voluntary health insurance rather than trying to undermine it. Persons unable to pay subscription charges for voluntary prepayment plans would be provided with unidentifiable cards or certificates which would entitle them to the same care as self-supporting citizens. Claims in these cases would be identified only by contract number, and the cost of such care would be borne by the federally assisted State programme. The assistance aspect of the programme would be supervised by the government agencies, but the voluntary health-insurance programme for the great majority of self-supporting people would be left entirely free of regulations and would be stimulated to the fullest possible extent. This Bill also provides for (1) surveys of existing diagnostic facilities, (2) surveys of areas unable to attract doctors and dentists because of low income, (3) surveys of existing enrolment in voluntary prepayment plans, (4) payment of non-profit health-insurance premiums during periods of unemployment, and (5) financing of long-term care.

Under another compulsory health insurance Bill (HR6766), sponsored by Representative Mrs. Bosone, benefits would be payable on a "$50 deductible" basis—that is, when a participating citizen has paid $50 in medical care (including hospital care), or $25 for dental care, the federal administration "shall pay the balance of the charges for services so furnished." The Bill would be financed by a 3% payroll tax on earnings up to $3600 a year with an additional 1% from general tax funds as in S1679.

HR7418, sponsored by Representative Boggs, is an ingenious scheme. It would modify the present federal income-tax law (which permits deductions of medical expense in excess of 5% of gross income to determine taxable income) as follows: if a taxpayer has a gross income under $2000, he can deduct all of his medical expenses; for an income between $2000 and $4000 the deduction would be the excess over 1% of the gross income; from $4000 to $6000 it would be 2%, and from $6000 to $8000 it would be 3%; from $8000 to $10,000 the deduction would be the excess over 4% of the gross income, and over $10,000 it would be 5%.

HR6819, sponsored by Representative Keating, is also concerned with income-tax and medical expense, but in a radically different way. If gross income is over $2000, this Bill would permit 90% of health-insurance subscription charges to be deducted from the tax itself. For income between $2000 and $4000, 85% of the health-insurance subscription charges would be deducted from the tax. For income between $4000 and $6000 the deduction would be 80%; between $6000 and $8000, 75%; and between $8000 and $10,000, 70%. For incomes over $10,000 the deduction would be 60%. The Bill would put the federal government in the position of paying a large portion of the health bill of the nation. Only approved health-insurance subscription charges would be qualified, thus leading to some measure of federal control, and income-tax would have to be increased to allow for the additional expense. A criticism of both HR7418 and HR6819 is that many of the citizens who most need relief on medical expense do not file income-tax returns.

The above are the major health proposals facing the present Congress. Some of them, it is pointed out in *Hospitals*, have a familiar ring about them; others are recent, and the point is made that this is encouraging as indicating that legislators are not becoming stagnant in their thinking. The change seems to reflect a growing optimism—a reaffirmation of faith in the voluntary system. It is no longer a question of "compulsory health or nothing." Rather is it a choice of several methods and a seeking for workable schemes.

MEDICAL LEGISLATION IN NEW ZEALAND

FROM OUR NEW ZEALAND CORRESPONDENT

TWO Acts of medical interest have been passed in the 1950 session.

Medical Research Council Act, 1950.—This incorporates the M.R.C., which has been in existence since 1937, in order to assure continuity of medical research and permanent conditions for research-workers. It is hoped also to attract endowments and bequests to assist in medical research.

The membership is to include the director-general of health; the permanent secretary of the Department of Scientific and Industrial Research; the dean of the medical faculty in the University of Otago; a series of nominees to be appointed by the minister from the B.M.A., board of health, N.Z. committee of the R.A.C.P. and R.A.C.S., and Royal Society of New Zealand; and two from the Senate of New Zealand University recommended by its academic board.

The functions of the council are to foster medical research, to publish reports, and to furnish advice. It may make grants to individuals, colleges, and institutions from a fund to be vested in the council. Any discoveries made by officers of the council or by those working under its support are to be the property of the council.

These provisions mark a major step forward, and follow soon after the visit of Sir Henry Dale and others whose advice the government sought. During the discussion of the Bill in Parliament, strong representations were made on the importance of dental research. The minister (Mr. J. T. Watts) announced that it was planned to appropriate £33,000 from government funds this year, as against £21,000 last year. This was in contrast to the total sum of £25–30 million spent last year, in toto, on the health of the community.

Medical Practitioners Act, 1950.—This consolidates previous Acts relating to registration and discipline, and adds a number of new conditions, chiefly those recommended by the Cleary report of 1948 on discipline under the Social Security Act.[1]

The Medical Council remains much as before in constitution and powers, and becomes a higher court in relation to the disciplinary committee. It consists of seven members: the director-general of health; the dean of the medical faculty; and five practitioners appointed by the minister, one on the recommendation of the B.M.A. Its powers are: fine up to £100, suspension from practice up to twelve months with consent of the attorney-general; and a motion to the Supreme Court to remove the practitioner's name from the Register. A new variety of registration is introduced (to be effective at a date to be gazetted)—conditional registration for recent graduates, to be confirmed as registration after a period of internship or other service similar to that which is to be required in England. Reciprocity with other countries remains as before.

Within the profession discipline is vested in a Medical Practitioners' Disciplinary Committee, and in divisional disciplinary committees. All the members of these committees are medical men, and almost all are to be appointed by the B.M.A. Their scope is professional misconduct, short of grave impropriety or infamous conduct in a professional respect, which is the concern of the Medical Council. The powers of the disciplinary committee are subject to appeal to the Medical Council, and include a fine up to £100, censure, or order to pay costs and expenses.

Dietitians.—Also passed in the 1950 session was a Bill to further the knowledge of nutrition and dietetics, and to provide for the training and registration of dietitians under the Dietitians Board.

Qualification for registration is defined by regulations, and power is given to the board to approve hospitals and other institutions as training-schools. Registered dietitians are to have annual practising certificates, and hospital boards may appoint only registered dietitians. The board has disciplinary powers over registered dietitians, subject to appeal to a special magisterial board of appeal. The uniform and title "dietitian" are protected under the Act.

1. See *Lancet*, 1949, ii, 855.

NATIONAL SERVICE FOR DOCTORS

THE Central Medical War Committee has been notified by the Ministry of Health that, with effect from Dec. 1, registered medical practitioners who are placed in grade III or grade IV by National Service medical boards, provided that they are considered suitable for employment in the Armed Forces, are to be regarded as available for National Service in the same way as doctors in grades I and II.

It is not at present proposed that this should be applied to doctors who were placed in grade III or grade IV before Dec. 1 and who may therefore have been officially informed that they were outside the field for call-up. Doctors graded III or IV by National Service medical boards on or after Dec. 1 cannot assume that they are unfit for National Service unless and until they are so notified by the Central Medical War Committee.

This change in the recruitment arrangements for doctors, which has been approved by the Central Medical War Committee, is necessary in view of the present shortage of medical officers in the Forces.

The Wider World

A VISIT TO GERMANY

FROM A MEDICAL CORRESPONDENT

A VISIT to Germany nowadays may be one of many things. A holiday of pre-war kind, with reservations and limitations; a visit to Oberammergau to see the Passion Play; or a visit either on business or politics, or to the Occupation Forces or the Control Commission. It was to this last group that mine belonged: the Army and the Royal Air Force plus the Control Commission were my objectives.

Judging by my experience, the average speed of military vehicles on duty is round about 50 miles an hour. But the chief danger of such a visit lies in the overwhelming hospitality of all concerned, and the chief surprise (speaking broadly) is the good conditions in which members of the Occupation Forces live.

CHANGES AND DIFFERENCES

When, in 1945, I visited Germany for the first time after the war, the streets of Berlin were heaped with the debris of shattered buildings; the Chancellery was as easily accessible as the Nelson Column, and curios could still be picked out of the ruins. And while the black market flourished along the main boulevards, night life flourished in underground cellars. A gun (in the gangster sense) was flourished at my back as I talked with senior officers in the Press bar, and I saw two victims of casual shootings, both members of the Army.

That kind of thing has vanished; and, as far as the Services and the Control Commission are concerned, the background of life is more like that of an Indian station, in the days of British rule in India, than anything else I know. But the work done in the Occupation Forces is just as hard as that of hard-working men and women in this country, and the hours are often longer. Since 1945 this work has helped to change the whole scene. The food shortage, once so acute, has been overcome; hospitals are working, industries are working, long-distance trains are working, and so are local train and tram services in the big towns. Nevertheless there is still unemployment, which is reflected in the ease with which domestic assistance is obtained.

Travelling in the British zone (which is about as big as England and Wales) one sees many differences between Germany and Great Britain, and some of them are unexpected. The countryside I saw was very well cultivated, but for the most part was in small fields

separated by stakes and strands of wire. The fields were as a rule so small as to make the use of most agricultural machines impossible, and probably in any case uneconomic. The peasant with his hand hoe dominated the scene—sometimes a man and sometimes a woman. Very many chickens and geese were to be seen, and I was told that the poultry population was greater than it had been before the war. But during all my drives, including long distances on the autobahns, I only once saw an agricultural machine, and that was an early-model reaper and binder.

Another aspect of German farming which impinges directly on health is dairying. Cows are milked in the fields by the probably honest, but apparently usually unwashed, hands of the peasant, and the proportion of tuberculous cows is very high indeed. (For this reason no German milk is issued to British personnel, who get their milk out of tins.*) On the other hand, statements that the incidence of tuberculosis is very high in the German population are not supported by the death-rates, which do not correspond (our authorities found) with the alleged prevalence. A possible explanation lies in the fact that during the food shortage after the Armistice tuberculous patients, and presumably suspects, were entitled to higher rations. As ration scales went up, the apparent incidence of tuberculosis has gone down. Changed economic conditions have also worked other health changes. In 1945, at the time of the black-market boom, when German currency was of very little value, the incidence of venereal diseases was very high. But this desperate state of affairs has passed. The cigarette is no longer a form of currency, and has got back to its pre-war position in the slot machine—a device which, some readers may remember, used to operate at reasonable prices in our own country.

THE MEDICAL PROFESSION

The organisation of doctors in Germany is on a basis of provinces (*Lander*). In the British zone there are three of these provinces—Schleswig-Holstein, Lower Saxony, and North Rhine-Westphalia. The German doctors in control of these provincial areas have powers which are partly official and partly derived from the professional organisation: it is a kind of compromise between a regional and a B.M.A. organisation. The cost of the organisation comes out of occupation costs, paid by the Germans, and supervised carefully by the High Commissioner's staff.

Some German members of the staff of the provincial organisations told me that there were large numbers of doctors in Germany unemployed. They would be willing to emigrate; but for service as doctors in such places as the British Dominions and Colonies they would need to speak, read, and write English; and not many of them can do this. It is also very doubtful whether the Dominions would take them in. Australia, which has been encouraging the immigration of Germans into her territory, is willing to accept German doctors as individuals—but not to accept them as doctors. Even this might attract some German doctors, for I heard of some of them being employed on farms in Germany. Lack of knowledge of English restricts the possibility of their employment by the Control Commission or the Armed Forces in Germany, though some of them work with the troops as civilian medical practitioners. Differences in their method of work and in their approach to patients also present difficulty. On the other hand there are men in Germany of high reputation in their specialties who could render valuable service as consultants.

Among the many people I met in Germany was a small group of German doctors, some of whom had recently been to England to study our methods of training and employment of sanitary inspectors. I was told that if you ask a German whether his town employs sanitary inspectors he will say Yes. But he means only a man who clears the drains. The work of the British sanitary inspectors as a part of the health service was a revelation to the German doctors, for they did not know how much valuable work can be done by the kind of friendly and ubiquitous official we have in this country.

RECONSTRUCTION AND THE OCCUPATION

At the end of the war the displaced persons' problem in Germany was very large and very grave. Now it has shrunk to a much smaller size, and it is in theory to disappear next January when all D.P.s who remain in the camps (because they have refused to return to their countries or to emigrate) will automatically become German citizens. But there is still a stream of refugees coming from Eastern Germany into the West, and these people present a problem not yet solved, especially as there is still much unemployment in the big towns of the Ruhr and elsewhere.

Signs of the bombing of Germany's towns and industrial establishments are to be seen everywhere. There are new buildings—some of very poor quality, erected very quickly—but it has not yet been possible to undertake anything like the rebuilding seen in London and other blitzed areas here. The destruction was, of course, far greater in Germany.

During this time of cold war, it is strange to find conditions so quiet and orderly in Berlin. One can drive through the city from the British to the American or the French or the Soviet sector as freely as in London—indeed much more freely, because there is very little motor traffic. The only difference is that anyone who goes into the Soviet sector must be ready to produce his identity card or passport at a moment's notice. Women employed by the Control Commission or Services, and wives of Servicemen, habitually go into the Soviet zone to the theatre and ballet, which are excellent.

For the families of British personnel, life in Germany is pleasant, and Berlin is one of the most popular stations, because of sports and musical and theatrical attractions. In places other than Berlin, the British often have to live at long distances from their place of work: some families are quite isolated and depend in emergency on German doctors and German hospitals. The general feeling towards them is reasonably friendly. In many parts of Germany there is little hostility towards Britain, and in Hanover the suggestion has actually been canvassed that the ancient link with England should be renewed by a member of the British Royal Family assuming the old Hanoverian throne.

One interesting development in Germany has arisen from the association now permitted between troops and civilian Germans. Some of the young soldiers have wished to become engaged and to marry Germans, and a number of marriages have taken place. In a large proportion these are said to have proved successful, and perhaps some of the credit should go to the method used by the Army and Air Force in dealing with applications for leave to marry. First an official request has to be made; and this in itself has an effect on the man who makes it. Secondly, if the man has not recently been on leave, he is sent on leave before a decision is made; and this sometimes causes him to change his mind. And thirdly he has the opportunity of discussing the question of marriage with an understanding and well-informed superior. This cautious approach is salutary, and civilian society in England might well adopt a similar procedure.

* American troops stationed in Britain during the late war received their milk from the United States, because no reliance was placed on the safety of British milk.—ED.L.

Disabilities

56. CEREBRAL PALSY

MY problem is to behave normally, being equipped with arms and legs which move in any direction I choose, but which are likely to move in a series of jerks and also to move themselves when I aim only to sit still. Recently the condition has been described to me as athetoid quadriplegia, but in my childhood no definite diagnosis was made and no treatment prescribed except for a brief course of massage in my third year.

My first attempts at solving the problem were not made with any conscious effort, although probably they were much influenced by my mother's guidance. I began to walk with my feet wide apart just before I was two. Though very liable to fall over, I was in a position to investigate life. I followed my mother about the house, and like every other child I began to learn by imitation and repetition. I would stress repetition. I knew perfectly well what I aimed to do, and I was convinced that if I tried often enough I should succeed. Fortunately that initial confidence has never left me.

I had seen my mother sewing and demanded a needle and thread for myself. She did not care to entrust a needle to my unsteady hands but gave me a bodkin. I regarded this as an unworthy tool. Having watched me with it, my mother decided that I was not, after all, likely to damage myself much; so I got a needle, and a pair of scissors as well. My cutting might be jagged; but I almost always accomplished the movement I intended, however waywardly. Even if I did lose control of a movement I was able to stop and so save myself from harm. It seems to me that severe accidents are more likely to befall normal people, who naturally neglect the one-in-a-hundred chance, than those with cerebral palsy, who have their greater risk constantly in mind. In twenty-eight years I have cut, burnt, and scalded myself, but neither more often nor more seriously than a normal person.

I succeeded in sewing and in knitting by keeping my knees together, to give a firm base for operations, and resting my hands on them. Similarly, I typed and played the piano by dint of keeping the edge of my palm and my wrist on the frame of the typewriter or the border of the keyboard. If my hands rest somewhere I can use my fingers easily, but if I hold up both hands in front of me—the normal posture in sewing—I cannot make a movement of any accuracy. An improved action has often meant a more normal-looking movement and posture; but unfortunately it has sometimes also meant increased muscular tension. Tension did in fact increase to the point where I remained comparatively still when not attempting to move and not embarrassed or under strain. Thus, when first made to relax, I was surprised by the extent of my involuntary motion in repose.

My mother soon realised that I must learn to meet people and transact naturally the day-to-day business of life. In early childhood my speech was hardly intelligible to strangers; but as soon as it improved a little she forcibly broke herself of the habit of answering for me, and I had to make polite conversation to our various acquaintances. I was also sent into shops to ask for this or that with my mother remaining doggedly beyond call.

I have often wondered in retrospect at my mother's self-control in letting me experiment slowly and clumsily with this and that when her impulse must have been to do these things herself quickly and safely. To that restraint I owe incalculably much. By the time I was four I was walking rather more steadily and was taking part in mild rough and tumble with other children. From imitating my mother I passed to imitating them; older and younger children might now and then look askance at me, but I was always at ease with my contemporaries, who accepted me with as little question as they did the rest of their environment. Gradually I walked with my feet closer together; and I remember walks punctuated by my mother's injunction to keep my knees back, for they tended to be slightly bent. For some years my head shook noticeably as I walked, but latterly that has subsided. I have been shown that my leg muscles are stiffer than they should be, and I try now to correct this tension; but walking causes me neither fatigue nor embarrassment. I can cover as much as fifteen miles in a day without discomfort.

At six years old I went to a small preparatory school; its chief virtue was in having few rough boys whose boisterousness might upset my precarious balance. Here I met for the first time one of my most stubborn problems—how to control my hand enough to write. When, at the age of nine, I went to a secondary school I could only write standing up and very slowly. Using a pen brought me almost to a standstill, so I wrote my entry papers in pencil. My admission probably determined all my subsequent life. Once and for all I was in the main stream, without time or inclination to regard myself as one apart. One or two of the staff tried to kill me with kindness, but the majority merely saw that I had reasonable ability and were anxious that I should make the best possible use of it. I was excused nothing except games and apparatus work in the gymnasium. Looking back, I am a little surprised by my own docility. One of the trials of my life was a weekly slip test—one-word answers to grammatical questions written on a slip of paper some two by seven inches which I found most difficult to anchor and write on at the same time. It never occurred to me to ask for a larger sheet. There was also my history notebook in which, as a weekend task, rough notes were transcribed with all the niceties of indentation and red-ink underlinings. To compass half without blot or smudge was to increase the agony of concentration lest I should mar the rest. All of this was done standing up. If I sat down and bent my elbow, I lost control of my hand. I wrote virtually with my whole arm. I realise now that trying to attain the accuracy and neatness expected of the average child greatly added to the tension in my muscles. However, for the mental discipline of those years I shall always be grateful.

When the rest were due to take school certificate I was asked if I wanted to enter. I answered Yes, and permission was obtained for me to write in indelible pencil; any time concession was, I learnt, out of the question. The examination was a race between me and the clock; my only hope was to start writing the moment I had read the question. In the event I had a "credit" for each of the seven subjects I had taken. Throughout the rest of my school career "credit" standard was usually the limit of my achievement, dependent as it was on the speed of my writing. After taking school certificate I resolved to write no longer standing up. I made myself sit down and found that by thrusting my left hand beneath my right I could control my hand, even though I had a permanent bruise through my forearm rubbing against the edge of the desk. It was not better than standing up, but it looked better.

At eighteen I left home for the first time and went to college. I had mastered two or three years earlier the last item of my toilet—waist-long hair to be brushed, plaited, and coiled. Other girls were more than willing to do the few things I could not, such as carrying buffet meals to table. Even now to be quite sure of not spilling from a cup, I either lift it with both hands or, less conspicuously, grip my right wrist with my left hand. For me, as for most undergraduates, academic work was only a part of life. I danced—not very well, I admit—had a hand in the college magazine, and debated. The days of indistinct speech were behind me, and I did not have

much difficulty in speaking to an audience. Rather, I was liable to find myself in ordinary conversation shouting some isolated and trivial phrase without intending it. Gradually I trained myself to keep pitch and volume level, and was then criticised for having a monotonous voice.

When my final examination was in sight I realised that if I wrote my papers as I had at school their brevity would condemn me to a third-class. Permission was given for an amanuensis to type my papers. I had begun to type myself in my last years at school, but was not yet sufficiently proficient to manage examination papers. A first came as a surprise despite all my scheming to secure it. For the next two years I did research.

I came home with qualifications which would have sufficed to procure a job for a normal person. I had to discover a job in which my handicap would not hinder me, and then persuade someone to let me show I was capable of it. In the ensuing months both problems seemed insoluble. Obviously I had to tender a medical explanation of myself to any prospective employer: the term appearing on it was "cerebral diplegia," and I suspected that a prudent resolve to keep clear of the unknown (for the condition is still unknown to many people) would militate against my being employed. I am not sure whether in the aggregate other people's ignorance of the disability hindered or helped. In the end the problem solved itself. I was told by friends of a form of librarianship which they thought would suit me. I applied, was interviewed over—of all inauspicious things—a cup of tea, and was offered a job. At the end of a month I was told what I most wanted to hear—that I was doing the work of a normal person with no allowances made.

That perhaps should be the end of the story. In all these years, however, I had done little domestic work, because I was fully occupied elsewhere. Less than two years ago I changed my lodgings and began to cook and clean for myself. Friends, and even my mother, doubted whether I could manage it, but I knew domestic routine well enough and retained my old confidence that what I knew how to do I should eventually succeed in doing. As always, my ability increased with practice. In cooking, liquids are the only real difficulty; but I use large jugs and pans, from which I am less likely to spill. If I have occasion to fill a glass or cup I fill it where I am going to use it. When I had lived thus for several weeks I suddenly realised that I had come as near to self-dependence as do the majority of people in our complex civilisation.

Within the last two years also, I have benefited from specialised cerebral-palsy treatment which was not to be had in this country until comparatively recently. One of its heartening results is that I am gradually finding myself able to write in something approaching the normal fashion. Looking back, I see myself acting as would any child experiencing a comparable disability offset by good general health and fair intelligence; but any success I have had in minimising my handicap I owe largely to circumstances. Foremost among these I would put wise handling in childhood; the chance of a normal education; and, finally, work in which to prove myself, with all that this means in confidence and serenity.

"... Hospital experts tell us that for an efficient hospital service we require an increase in beds in the nature of 40% above the present accommodation. I suggest this is the wrong method of approach and that the main function of the hospital service should be to see in what way the number of beds could be *reduced*.... This approach makes the problem much more difficult. It is far easier, if much more expensive, to treat existing patients than to carry out investigations into the cause of the illnesses and the means at our disposal of preventing them. ... with one exception, no Regional Hospital Board in this country has amongst its members a professional epidemiologist."—Dr. HUGH PAUL, M.O.H. for Smethwick, in his report for 1949.

In England Now

A Running Commentary by Peripatetic Correspondents

ON Friday mornings the great amphitheatre is crowded to suffocation; one had never imagined that there were so many people in Paris interested in dermatology. The back four rows are full of students and nurses, a hundred or two. The middle benches are occupied by post-graduate students from all over metropolitan France, the colonies, and even the lands of dermatological heresy. Flemish mingles with the honeyed tones of Louisiana, heavily accentuated Breton with the garlicked staccato of southern lands. The front rows are reserved for senior colleagues and distinguished visitors, each of whom as he enters precipitates a fresh epidemic of hand-shaking.

At last the Professor appears, deus ex machina. All stand until he waves them to their seats with a gesture both cordial and impatient. The cases rapidly succeed one another and are demonstrated to the throng with humour, skill, and touching humility. The audience is by no means passive and at times the scene recalls a cattle-market, the poor beasts being prodded and pushed, the cries of claim and denial growing louder and more insistent until the hubbub is stilled by the thin high voice of the Professor rising above the din. What can the new student gain from such heated discussions of minutiæ, from the distant parade of rarities, the moutons à six pattes? But the Professor is aware of his gallery; now there must be no dermatology through a telescope. This case must circulate, mark it well. It is a chancre, whose owner looks more sheepish than the alleged owner of six legs.

* * *

The narrow road to consultant status is so hedged about by family commitments that when the principal of a practice in which I was once a part-time assistant telephoned to say his partner had a feverish cold I gladly accepted his invitation to help with an evening surgery. The waiting-room was fuller than I had ever seen it in the old days, when a man of some 30 years presented himself. "I am quite well," he announced, "but I can't get up in the morning." My immediate reaction was sympathetic. There were no other symptoms, so here was a problem: should a member of the College and a doctor of medicine allow a patient to come and go unexamined? This could not be; but neurological examination revealed no grave mischief. "What would you like me to do?" I inquired. "Can't you give me a bottle of something?" he said. The problem became more difficult. He was obviously the sort of man who would resent any treatment which prevented him enjoying a full night's sleep, and I had no wish to make him join the numerous gathering outside who required sleeping tablets. I suggested an alarm-clock. "No use," he said, "doesn't touch me." "Can't your wife give you a nudge with her knee?" I asked. It seemed that she would be the next patient in and was suffering from sciatica. I presumed she had only one leg and bilateral disability of the arms, and pursued this line no further. "Mist. Acid. Strych.," I wrote on the pad. "Thank you," he beamed. He rose to go and then remembered: "Can I have a certificate, please, and will you date it for last Monday? I've missed three days through this already!"

* * *

Have you ever had hysterical purpura? I have. It happens that I am carrying out some experiments on volunteers, and, as seems only fair, I myself act as one of the principal guineapigs. On the day that I developed my hysterical manifestation, I had an injection of "X" and then ran up and down a long flight of stairs until exhausted. I managed more than 1100 stairs up and down and decided this was not a bad performance, being close on 40 and not a great one for exertion. Unfortunately, the programme called for a similar burst two hours later. I excused myself from the professorial ward-round and went down to the laboratory, torn between a desire to know the results of the experiment and a strong distaste for taking too much exercise twice in one day. Happening to glance at my hands, I was

surprised to see some blue blotches on the right dorsum. My surprise turned to mild dismay when I looked closer and found that the blotches looked like purpura. As far as I knew, "X" could not have had this effect. It was also odd that there seemed to be no similar lesions elsewhere; and, my imagination now taking over, I decided that the colleague who had administered "X" might have put it by mistake into an artery.

Still dubious, I walked over to the ancient monument whose steps we run up and down. I took off my jacket—and then put it on again and went back to the ward-round, where I thrust my right hand at the professor, asking "Is this purpura?" "It certainly looks remarkably like it," he replied, and then put on his spectacles and looked with some care. Finally he delivered judgment. This, he thought, was not purpura, although the lesions resembled it; and it would be quite safe to run to exhaustion. I retired slightly discomfited; and, as I went, I heard one of the junior members of the unit make a remark which would have driven me to run myself silly even if the professor had thought it unwise. In a pedantic voice, amid laughter from the rest of the unit, he declared: "The lesions have the characteristics and distribution of senile purpura!"

* * *

We peripatetics are careful to disguise our individuality, but we offer points of interest as a group, and I have begun a preliminary classification. First there is the peripat—the bluff, friendly, down-to-earth country G.P., whose practice consists of countrymen with a fund of earthy knowledge of practical medicine. He speaks for a return to dock-leaves and foxglove, and he rather disapproves of the cold comfort of modern techniques. Then there is the peripateticist, who is very different. He writes accurate but somewhat dry accounts of international meetings. There are also the peripatechnicians and peripatetologists, who are always experimenting with things like trombones and A.P.S We must not forget the peripathetic correspondent who is bullied by his wife, his patients, and the executive council, and who makes anonymous faces at Mr. Bevan from under the Editor's cloak. And, for all I know, Mr. Bevan himself wields a peripateticeltic quill. I strongly suspect that I sometimes see a peripateditorial comment which is too ebullient to appear elsewhere in this journal.

* * *

The newcomer to general practice, however well trained and conscientious, must expect some snags if he starts his assistantship in a Derbyshire colliery town. For example, at evening surgery a tough miner walks in, and when I ask what his trouble is his answer sounds like, "I want a lodjorge." "A what?" said I. "A lodjorge," he repeated, with an impatient frown, "double L OY D GEO RGE." This still did not enlighten me, so he got down to monosyllables: "I want to go on't club." But being a doctor of post-war vintage I was unenlightened, so I consulted the head of the practice. After briefly reviewing the history of health insurance in Great Britain he explained that up North Lloyd George is looked on as the permanent head of all State insurance schemes, so they call all health certificates after him. The phrase, "To go on't club," is merely the jargon of friendly society days for "to go sick." Quite simple, when one knew the answer. But when next day a man with a crushed toe asked to go on compo, though this sounded to me like a kind of stewed fruit, I applied to my employer at once without first exposing my ignorance of the Workmen's Compensation Acts.

* * *

"Tea garden
Bear left"
—So ran the notice. Eager and athirst
Thither we speedily inclined
Our faltering steps, only to find
A sharry load had got there first,
Leaving behind
A bear garden
With no tea left.

* * *

As a seasonable gesture of good will to our statistician, Dr. R. has promised to stop referring to his "adjusted data" as "cooked figures."

Letters to the Editor

STUDY OF DELINQUENCY

SIR,—The violence of the psychiatric onslaught upon me in your recent correspondence columns has set me wondering. Can it be that I have touched a tender spot? Dr. Paul Reiwald, the well-known criminologist, has suggested that society needs the criminal as a focus for its guilt-feelings. Am I the felon upon whom psychiatric guilt-feelings are being released? If so, the only psychiatrically respectable thing to do is to get at the cause of the guilt. And if I were allowed to indulge in a little diagnosis, I would suggest that this lies in the false position of the psychiatrist as such in the modern world. The short period of study hitherto required for his diploma is a quite inadequate training for the social responsibilities which he is called upon to undertake. Meanwhile our menacing "maladjustment" problem is virtually untouched, and will remain so until we have an adequate supply of social practitioners trained on realistic lines. The tradition, furthermore, that the treatment of "mental illness" demands full medical qualification means that this supply is being artificially limited.

This social maladjustment of the psychiatrist is an historical commonplace: it is a re-enactment of the struggle of the medieval guild against the new class of artisan, of the hand-loom weaver against the new manufacturing techniques, and of the craftsman-engineer against "dilution." It is in accordance with historical expectation, then, that many psychiatrists will fight to maintain their craft position, and that those who advocate new techniques and a more realistic training will be the subject of their attacks.

Matters have been brought to a crisis recently, not only by the deterioration in the nation's "emotional health," but also by the revolution in our knowledge during the last ten years (under the leadership, be it admitted, of the progressive wing of the psychiatrists, to which I have acknowledged my debt elsewhere). The object of my paper (Nov. 25) was to make some suggestions for the development of the new techniques, rather than to denigrate psychiatrists as a class. And if I have created the wrong impression I hasten to correct it. Were I, however, to shirk a frank statement of the position for fear of treading on corns, I should be failing in a social duty. It is a melancholy fact that we are at present allowing the personalities of many children to be so damaged that they are destined to become, if not delinquent, at least unhappy and unpleasant people who will create still more unhappiness both around them and in the next generation. Of the 90 delinquent youths of whom, in my recent study,[1] I could obtain data about childhood, no less than 62 had shown gross symptoms of maladjustment or unadjustment before their tenth year. Nothing effective was done about them, and indeed very few of them had had any contact with a clinic at all. Dr. Edelston's (Dec. 9) optimism about the spotting of the unhappy child is not justified.

There are many points in Dr. Bodman's letter (Dec. 2) which tempt me to reply, but for reasons of space I must limit myself to his main taunt. Far from my generalisations being based on "a few particular instances" or upon inexperience, as he suggests, I have been in a unique position to assess the validity of a fairly representative cross-section of psychiatric judgments. I have in fact been able to read a large number of psychiatrist's reports upon delinquent youths of whom I could subsequently make a detailed long-term study. Not wishing to exacerbate interprofessional differences, I only quoted

1. Delinquency and Human Nature. Dunfermline, 1950.

one or two which I needed for the demonstration of prevalent diagnostic errors. Were I ever provoked into the publication of the remainder, it would be seen that the general run of the "psychiatric examinations" were very haphazard affairs. The reports of different psychiatrists upon the same boy were sometimes flatly contradictory; and the general lack of psychological knowledge and disciplined scientific thinking were maladroitly disguised by long words and nearly meaningless shibboleths.

But I must drag myself from the pleasures of polemic to make some positive suggestions. Mental ill health, it is now realised, has its roots in childhood, which means in our family life or wherever children are. The main damage is done before the patient comes to the clinic. The spotting of the unhappy child in his pre-delinquent, pre-neurotic, or pre-psychotic period must be the work of those who have continuous contact with the nation's children. This means that the elements of emotional hygiene must form part of the training of the school-teacher, club leader, school welfare-officer, and probation officer, and above all of the family doctor.

Furthermore I am certain that the essentials of the modern personality-psychology, with its straightforward analysis in terms of human relationships and basic emotional needs, is simple enough to be handled by these varied types of social practitioner. If, for example, we acted on the principle that every human being, to remain emotionally healthy, must feel secure as a member of a small "belonging-group," we would largely solve our "maladjustment" problem. Yet one hears of cases where shock therapy and other more drastic measures are resorted to without any attempt to readjust the patient's human situation. It is for this reason that I have emphasised the need for guides to observation which will direct the attention of the non-specialist social practitioner to the patient's defective human relationships, and indicate to him the most likely causes of the anxiety and the seriousness of the false adjustment.

One might say that, with their main work lying in other directions, the doctor, school-teacher and social worker should be equipped to render psychological first-aid. The case needing more than advice upon common-sense lines would be handed over to the fully trained worker in mental health.

Even the psychological specialist does not require to work through the full medical course. And the three years which would be the minimum for his becoming a competent psychologist, after the 4–5 years of his general course, would surely discourage the student at a time when many more clinicians are required. The general medical course would probably burden him with much he would never need, and not go far enough along other lines. After a discussion with a lecturer in anatomy at a London training hospital, during which I raised a number of neurological points which interested me as a psychologist, he surprised me by saying: "I never touch upon any of these things in my lectures." The psychologist, then, would apparently require much more neurology than the general practitioner and less general anatomy and pharmacy.

The issue is more than a personal one between academically and medically trained psychologists. In my report I suggested that the poor results achieved by psychology as a science were in part due to the one-sidedness of the training of each. It is rather a question, then, of re-thinking and re-planning the professional training both of the general social practitioner of every kind and of the mental specialist, in the light of our present social needs.

Redhill, Surrey. D. H. STOTT.

HERPES ZOSTER AND VARICELLA COMPLICATED BY PARALYSIS OF THE TRANSVERSE COLON

SIR,—The following case has some interesting features.

On Nov. 9, 1949, the patient, a man aged 79, was suddenly attacked by pain in the hepatic region. The next day herpes zoster manifested itself, and spread rapidly over the skin area supplied by the 8th, 9th, and 10th dorsal nerves of the right side. Pain was intense, especially over the epigastrium.

On Nov. 13 widespread but discrete varicella vesicles appeared on trunk and extremities, with a few scattered vesicles on the scalp. The herpes vesicles had become confluent, and the affected area was covered with huge bullæ. Pain was still severe. On Nov. 18 'Aureomycin' 250 mg. once daily was started, but this was discontinued after a week because no benefit had been noted. By Nov. 25 the herpetic bullæ had all broken and the area had the appearance of a third-degree burn.

On Dec. 12 a disturbing sensation of coldness and weight suddenly developed in the situation of the transverse colon. From this time forward no natural motion of the bowels occurred until Jan. 20, 1950. A number of laxatives and purgatives were taken, but these caused only distension and distress. It appeared that peristalsis in the transverse colon had ceased, and relief was not obtained until high colonic wash-outs were commenced. During these, discomfort in the region of the hepatic flexure was pronounced, and a quantity of scybala came away towards the termination of the return of the enemata. On Jan. 16 a barium enema was given, and subsequent X-ray examination revealed nothing abnormal. During the thirty-nine days that this condition persisted the patient's condition deteriorated; he lost 28 lb. in weight and vomited several times; depression was intense.

On Jan. 19, against medical advice, the patient took a heroic dose of magnesium sulphate (1½ oz.), bringing away quantities of scybala. From this time onwards bowel action was normal. However, post-herpetic pain continued over the site of the zoster area, and there has been a persistent dragging and tearing sensation in the abdomen, especially over the transverse colon. On April 17, weekly applications of radiotherapy to the zoster area were commenced, but these were discontinued after the third application because no improvement had taken place. At both sites pain persists, twelve months after the onset.

It appears that in this case herpes zoster has involved not only spinal nerves but the sympathetic innervation of the transverse colon.

SURGEON.

DECAMETHONIUM IODIDE IN MYASTHENIA GRAVIS

SIR,—In their article of Nov. 18 Dr. Paton and Dr. Zaimis discuss the difference in mode of action of *d*-tubocurarine chloride and decamethonium iodide in producing neuromuscular block. They refer to the well-known idiosyncrasy to tubocurarine in myasthenia gravis and suggest that no such idiosyncrasy is to be expected in the case of decamethonium iodide.

The following description of the use of decamethonium iodide during the course of thymectomy for myasthenia gravis confirms this view.

Early this year a tall, heavily built policeman developed diplopia, ptosis, and increasing muscular weakness. Neostigmine up to 30 mg. two-hourly with atropine gr. $^1/_{100}$ had been required to stabilise him, but his disability was increasing and it was decided to perform thymectomy.

He received his usual dose of neostigmine and atropine three hours before operation; and 'Omnopon' gr. $^1/_2$ and scopolamine gr. $^1/_{150}$ were given one hour before. 0·75 ml. of 10% cocaine solution was injected through the cricothyroid membrane to anæsthetise the larynx and trachea. Induction by thiopentone 1 g. was followed immediately by oral intubation, using a cuffed tube. 2 litres per minute each of nitrous oxide and oxygen were administered by means of a semi-closed circuit with circle adsorber, and repeated small doses of thiopentone were injected into a saline drip.

A sternum-splitting approach to the anterior mediastinum was performed by Mr. T. Holmes Sellors, and a malignant tumour of the thymus was discovered. During its removal

it was necessary to open both pleural cavities and excise a segment of the pericardium and 2 in. of the left innominate vein.

The tumour was very vascular, and the advantages of the continued use of diathermy precluded the addition of cyclopropane or ether, which would have been indicated in view of the unusual resistance of this patient to thiopentone. A trial dose of decamethonium iodide 0·5 mg. was then given; and as no effect was discernible after 5 minutes a further 2·5 mg. was injected. This caused no obvious respiratory paralysis, but "assisted respiration" was facilitated. A total dose of 7·5 mg. of decamethonium iodide was used over a period of 35 minutes. There was a 5-minute period of intercostal paralysis; at no time was it possible to control respiration completely, but adequate ventilation and a steady mediastinum were obtained.

Recovery from both the decamethonium iodide and the anæsthetic was rapid and uneventful. Atropine gr. $^1/_{50}$ and neostigmine 2·5 mg. were given intravenously at the conclusion of the operation; an intramuscular injection of atropine gr. $^1/_{100}$ and neostigmine 5 mg. was given half an hour later, by which time the patient had regained consciousness. The subsequent postoperative course has been uneventful.

I am of the opinion that the tolerance of this myasthenic patient was certainly no less, and was possibly slightly greater, than would have been expected in a normal patient of similar build.

My thanks are due to Dr. Douglas McAlpine and Mr. T. Holmes Sellors.

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A SIMPLE LOW-SODIUM RÉGIME

SIR,—Although the cause of œdema in congestive heart-failure is still obscure, the value of sodium restriction in the management of this condition is firmly established.[1 2 3] While severe water restriction has been abandoned, most workers are averse to forcing fluids as Schemm [4] advocates, but give only as much water as the patient desires.[2 3]

There is less unanimity on the optimal degree of sodium restriction, and this is reflected in the variability of salt content (from 1 to 3 g.) in the routine low-sodium diets of different teaching hospitals.[5 6] In the treatment of hypertension, maximal levels have been fixed variously at 500 mg.,[7] 250 mg.,[8] and 150 mg.[9] per day. But in the treatment of congestive heart-failure, where salt excretion must be forced by mercurial diuretics, extreme restriction of dietary sodium increases the risk of precipitating uræmia, especially in the elderly,[10] in whom cardiac and renal impairment often coexist. Probably the optimal intake in the management of congestive heart-failure lies between 250 and 750 mg. of sodium per day.

Even under strict supervision in "metabolic units," the actual dietary sodium may be 50% greater than the calculated amount,[5] while the "low-salt diets" of the less well supervised kitchens of many hospitals are a myth. On the "salt-free" diets of two large hospitals employing dietitians and kitchen supervisors, normal individuals excrete up to 8 g. of urinary chloride per day.[10] Routine use of the Fantus [11] test for urinary chloride (and hence a rough but useful estimate of urinary sodium) demonstrates the difference between prescription and treatment.

In a hospital admitting large numbers of elderly patients in acute and chronic congestive heart-failure, the "salt-free" diet had been proved unreliable and attempts to improve it abortive. As a low-sodium régime of known and fixed constitution was necessary both for treatment and for research, Karell's [12] simple "cure de lait" was modified, with the foregoing desiderata in mind, and has proved eminently satisfactory as short-term therapy. The original "milk cure" provided too small a fluid intake and too low a calorie value to be acceptable.

4 pints (2250 ml.) daily of a mixture of equal parts of milk and water are given by mouth, the patient being allowed in addition as much water as he wishes. This diet contains approximately 570 mg. of sodium and is equivalent to about 750 calories.[13] (The sodium content of Oxford's tap-water is 7–19 mg. per litre.[14]) It has commonly been fortified with extra protein by the addition of calcium caseinate up to 3 oz. (90 g.) per day (as 'Casilan,' Glaxo), which increases its calorie value to about 1050 and its sodium content to 650 mg. The régime is continued for no longer than 14 days.

On this diet normal individuals "stabilise" their urinary chloride excretion at 2–3 g. per day within 2–5 days. In over 150 cases of congestive heart-failure with œdema, it has provided a simple and satisfactory means of ensuring dietary control in the early stages of treatment.

The only claims advanced for this modified Karell régime are: (1) it is simple to prepare and can readily be managed by a ward sister or a busy housewife; (2) its constitution is known, and its sodium content is as low as the low-sodium régimes of well-equipped and well-supervised hospitals; and (3) it provides an adequate fluid intake.

Its disadvantages are: (1) as with all low-sodium régimes, monotony and unpalatability, though no difficulty has been experienced in achieving willing perseverance for a fortnight; (2) low calorie value, but this has proved no handicap over so short a period; (3) too high a sodium content for the proper treatment of hypertension.

This régime is not meant to supersede formal low-sodium diets where supervision is adequate. But where adequate supervision cannot be exercised, as in general practice and in many hospitals, this simple low-sodium régime may ensure dietary control during the initial stages of treatment of congestive heart-failure.

Cowley Road Hospital,
Oxford.

P. D. BEDFORD.

VITAMIN K IN ALLERGIC PURPURA

SIR,—In your leading article of Dec. 2 you refer to the lack of a reliable specific remedy in Henoch-Schönlein purpura and other conditions.

I have treated 3 cases of allergic purpura, showing manifestations of the Henoch-Schönlein syndrome, with synthetic vitamin K, with resulting rapid recovery.

In the 1st of these cases a large spontaneous ecchymosis (5 in. by 3 in.) occurred on one shoulder, with several smaller ecchymoses on the thigh of the same side. Shoulder and knee joints on this side were swollen, red, and tender. All blood tests were normal, except the prothrombin-time (Quick), which was 60 sec. (normal control 16 sec.). After one week's treatment with synthetic vitamin K (20 mg. orally t.d.s.) the condition had resolved, and the prothrombin-time was 13 sec. (control 13 sec.).

In the 2nd case there was a long family history of allergy. The patient, a woman, from time to time had small ecchymoses on her limbs. There were no joint, alimentary, or renal signs. Prothrombin-time was 26 sec. (control 16 sec.); all other blood findings were normal. The condition again cleared up rapidly with vitamin K, and one week later the prothrombin-time was 15 sec. (control 14 sec.).

1. Bridges, W. C., Wheeler, E. O., White, P. D. *New Engl. J. Med.* 1946, **234**, 573. Peters, J. P. *Ibid*, 1948, **239**, 353.
2. Reid, H. A., Hughes, W. *Lancet*, 1949, i, 593.
3. Crutchfield, A. J. jun., Wood, J. E. jun. *Ann. intern. Med.* 1948, **28**, 28.
4. Schemm, F. R. *Ibid*, 1942, **17**, 952; *Ibid*, 1944, **21**, 937.
5. Medical Research Council. *Lancet*, Nov. 11, 1950, p. 509.
6. Wheeler, E. O., Bridges, W. C., White, P. D. *J. Amer. med. Ass.* 1947, **133**, 16.
7. Grollman, A. *J. Amer. diet. Ass.* 1946, **22**, 864.
8. Ucko, H. *Brit. med. J.* July 15, 1950, p. 144.
9. Kempner, W. *Med. J. N. Carolina*, 1944, **5**, 125.
10. Bedford, P. D. Unpublished observations.
11. Fantus, J. B. *J. Amer. med. Ass.* 1936, **107**, 14.
12. Karell, P. *Arch. gén. Méd.* 1866, 2, 513.
13. McCance, R. A., Widdowson, E. M. *Spec. Rep. Ser. med. Res. Coun., Lond.*, no. 235. H.M. Stationery Office, 1946.
14. Crawley, H. H. Personal communication.

In the 3rd case symptoms developed after three daily injections of crystalline penicillin G, administered for cellulitis of the leg. There was massive purpura, involving both lower limbs and the lower abdomen, with joint swelling of both knees, ankles, wrists, and fingers. There was an effusion into the knee-joint on the side with the original cellulitis. Various anti-histamine preparations were administered, with no effect. Oral and intramuscular vitamin K was then administered, with rapid improvement and eventual resolution. Unfortunately, in this case it was not possible to perform blood investigations. However, allergic purpura has been reported as a complication of penicillin therapy,[1] and there seems little doubt that it was so caused in this case.

Vitamin K may not be a specific remedy for Henoch-Schönlein purpura. Nevertheless, when deficient in the body it is a clot-promoting agent; and it might well be tried in these conditions.

Twickenham. DAVID WHEATLEY.

OCCUPATION AND BRONCHIAL CARCINOMA

SIR,—The present acute interest in the ætiology of carcinoma of the lung is reflected in Professor Dungal's article (Aug. 12), your leading article in the same issue, and the letter from Sir Ernest Kennaway (Sept. 23) which drew attention to the increasing incidence of this disease. More recently Doll and Bradford Hill [2] have published evidence implicating smoking as a causal factor.

The relation of occupation to this disease has long been a subject for speculation. Some years ago I collected data on occupation in 172 cases of certified deaths of males from carcinoma of the lung in the Metropolitan borough of Islington.

A difficulty in relating occupation to disease is that nothing may be known about the duration of the occupation; and further, in old patients the occupation may have ceased many years previously (although this need not rule out the occupation as a causal factor). Moreover, an apparently increased incidence in any one occupational group may only indicate an aggregation of persons employed in this occupation in the area under review. These 172 cases covered no fewer than 88 separate occupations, and it was essential to condense these into a smaller number of occupationally related classes. When this was done it was found that the classes did not correspond with the occupational grouping for males shown in the official census returns for Islington. In order to overcome this difficulty, and to attempt a standard of comparison, I compared the occupational incidence of carcinoma of the lung with the incidence of deaths from cancer of all other sites in the same occupational groups. When, in an occupational group, the ratio of deaths from carcinoma of the lung was high in proportion to deaths from cancer of all other sites, this would suggest that occupation was a possible causal factor. In the accompanying table columns 1 and 2 show the deaths of males from cancer of all other sites in each of the years 1932 and 1936, and column 3 shows the total of deaths from bronchial carcinoma in the 5 years from 1932 to 1936.

Occupation	*Cancer of other sites 1932*	*1936*	*Cancer of lung 1932–36*
Painter and decorator	8	7	9
Actor, musician, artist	1	3	3
Labourer and builder	20	19	21
Railway employee, engineer, smith, iron-founder	*3*	*14*	*21*
Butcher and meat-porter	7	4	3
Furnisher, french-polisher	8	4	4
Fishmonger	3	0	1
Bank, hotel, and office messenger	7	4	5
Hairdresser	2	1	0
Postman and P.O. employee, electrician	*3*	*6*	*10*
Laundryman	1	1	1
Ironmonger and locksmith	3	0	1
Window-cleaner	1 } 6	4 } 7	2 } 6
Street trader, dustman	5 }	3 }	4 }
Cellarman, barman	3	4	5
Printer, publisher, bookbinder	11	8	5
Horsekeeper, carman	7	9	3
Traveller, warehouseman, shopkeeper, storekeeper	3	3	4
Watchman, caretaker	3	5	3
Draper, tailor	7	8	*5*
Tramway employee	2	4	1
Dairyman, cattle drover	4	0	1
Clergyman, dentist, clerk, manager, insurance agent	10	13	10
Bootmaker and traveller in boots	4	2	3
Jeweller, clockmaker, scientific-instrument maker	8	8	4
Carpenter and woodworker	4	7	6
Brush and basket maker	2	1	1
Tobacconist, newsagent, &c.	6	1	0
Motor-driver, car-washer	*4*	*8*	*13*
Packer, checker, boxmaker	3	2	2
Gardener, greengrocer, &c.	5	5	3
Chemist, chemical engineer	2	0	2
Waiter, café-worker, baker	*3*	*3*	*10*
Coal-porter, sweep	1	3	3
Policeman, warder	0	4	1
Sailor	0	1	2

The numbers in each group are too small to be of statistical significance, but the four groups in which the proportion of lung cancers is highest are: (1) railway-workers, engineers, smiths, iron-founders; (2) G.P.O. workers (including postmen), electricians (5 of the 10 lung cancers in this group occurred in electricians); (3) motor-drivers, car-washers (6 of the 13 cancers in this group were in taxi-drivers); (4) waiters, café-workers, bakers (5 of the 10 were bakers). In groups 1, 3, and 4 inhalation of combustion products from coal, coke, or petrol might occur, but it is difficult to put group 2 (electricians, &c.) in this category.

This limited investigation proves nothing, but it may be of value to future investigators.

Colindale Hospital, London, N.W.9. W. E. SNELL.

PREPARING FOR GENERAL PRACTICE

SIR,—The views on general practice in this country expressed by three visiting deans of American medical schools, on which you commented in your issue of Oct. 28, are in general agreement with the Collings Report,[1] and are, in my view also, only too correct.

Whatever the general practitioner may have been in the past, to describe him today as the backbone of the profession is nonsense. In my 28 years of general practice there has been a vast increase in the number and variety of specialists; and this growth of specialisation has been accompanied by a corresponding decline in the clinical importance of the general practitioner. Today he is often little more than a mere signpost and disher-out of placebos.

The most important factor in the debasement of general practice is, to my mind, competition between general practitioners for goodwill. The patient can and often (I might almost say usually) does bring economic pressure to bear on his general practitioner, in order to secure the type of medical treatment *he* wants. This enforced pandering to the whims and, often, ignorance of patients tends in the long run to induce clinical demoralisation of even the most strong-minded and conscientious of general practitioners. I do not deny that competition can be useful in stimulating laggards to greater attention and even civility to their patients; but this advantage is, in my view, heavily outweighed by the damage done, not only to the practice of good medicine, but in turning those who would otherwise be friendly colleagues into distrustful, isolated competitors. It also results in enormous waste of public money on useless medicines.

Let us be paid either by salary or, like consultants, by session; but at all costs let us be done with competition for patients.

Wallasey. LENNOX JOHNSTON.

1. Anderson, A. B. *Med. J. Aust.* 1947, i, 305.
2. Doll, R., Hill, A. B. *Brit. med. J.* Sept. 30, 1950, p. 739.

1. Collings, J. S. *Lancet*, 1950, i, 555.

STRIÆ CUTIS DISTENSÆ

SIR,—The following case is reported because of the recent interest [1 2] in coloured lineæ distensæ developing during an infection.

A tall, thin, weedy boy, aged 17, was admitted on Aug. 6, 1949, having been ill for a week. He was found to have a large right-sided pleural effusion. Diagnostic thoracentesis on Aug. 8 below the angle of the right scapula in the 8th intercostal space produced clear straw-coloured lymphocytic fluid. No organisms were seen; culture and guineapig inoculation showed no evidence of tuberculosis. On Aug. 15 I examined him again and was surprised to find extensive purple lineæ distensæ on his back; they had certainly not been there 7 days earlier. They were more numerous on the side of the effusion, and over the lower lumbar area they were wider and longer. Pyrexia gradually settled during the next 3 weeks, and the patient was discharged well after 4½ months' rest, having gained 17 lb. (8 st. 10 lb. on admission, 9 st. 13 lb. on discharge). He was seen again in January and September, 1950, and has remained well. Chest radiography shows residual pleural thickening only. There was no evidence of an endocrinopathy. Urinary excretion of 17-ketosteroids was 5·6 mg. per day on Sept. 30, 1950 (normal male 8–22 mg. per day). The clinical course was that of a primary tuberculous effusion.

The lineæ distensæ were still purple though less so when seen in September; they were wider, longer, continuous in some places across the midline, and more marked on the left side. Over the sacrum they had faded from purple to white.

The appearance of red or purple lineæ distensæ has been noted during treatment with 'Cortisone,' [3 4] and Simpson [2] has stated that where they are found clinically "one can conclude with reasonable confidence that there is hypersecretion of adrenal-cortex hormones." Medvei [1] adduced a case in a youth with lobar pneumonia as an argument against the view of Simpson [5] that coloured lineæ distensæ are due to "the adrenal glands secreting an excess of cortisone, and that their hyperfunction is, therefore, playing an important part in the pathology of the condition observed." Selye,[6] however, states that the "general adaptation syndrome" may develop as the result of "non-specific stress": an infection may produce the hormonal defensive response, which is accompanied by an increase in the secretion of A.C.T.H.—a "glucocorticotropic" hormone which induces the adrenal cortex to produce cortisone. I suggest that in the case reported above the stress of infection induced the increased production of cortisone, which was manifested in the coloured lineæ striæ.

Persistence of the purple colour should mean continued high production of cortisone, the result of continued stress; and this is a reasonable hypothesis in a case of primary tuberculous effusion, which carries a 20% risk of pulmonary tuberculosis, usually developing within five years. In addition to this possible source of stress, my patient shows signs of possible genetic inferiority. He is surly, unappreciative, and a poor mixer. During 4½ months in hospital he never "adapted" himself to his circumstances, refused to occupy his time usefully, and never shared the cheerful atmosphere of the convalescent home. In this case, then, continued stress could be explained by a primary tuberculous effusion, poor physique, with rapid skeletal growth, and unusual personality. From the clinical facts that Medvei gives it is impossible to speculate why his "tall, slim, well-built youth," aged 20, with lobar pneumonia should have had persistent purple striæ after 6 years; but it is tempting to wonder whether the diagnosis was unequivocal, since the possibility of a primary tuberculous pleurisy would simplify the explanation.

1. Medvei, V. C. *Lancet*, 1950, i, 1174.
2. Simpson, S. L. *Ibid*, Sept. 23, 1950, p. 415.
3. McNee, J. W. *Brit. med. J.* 1950, i, 113.
4. Sprague, R. G., Power, M. H., Mason, H. L., Albert, A., Mathieson, D. R., Hench, P. S., Kendall, E. C., Slocumb, C. H., Polley, H. F. *Arch. intern. Med.* 1950, **85**, 199.
5. Simpson, S. L. *Post-grad. med. J.* 1950, **26**, 201.
6. Selye, H. *Brit. med. J.* 1950, i, 1383.

The distribution of the striæ in the present case calls for comment.

They were predominant on the right side, that of the effusion. The right side of the chest moved little on respiration; and, though the effusion was large and must have increased the volume of the chest on that side, clinically and radiologically there was no evidence either that the ribs were more horizontal than normally or that the intercostal spaces were enlarged and obliterated. Distension is usually accepted as the explanation for the site of coloured striæ in pregnancy, Cushing's syndrome, and during treatment with cortisone. This conception that distension causes a cleavage in the deeper parts of the cutis, possibly due to deficiency of elasticity, is rather naïve; it is surely more acceptable that distension merely determines the site of lesions to which there is already a predisposition. In the present case there was no gain in weight coincident with the appearance of the striæ; and, even if there had been, there is no satisfactory explanation of why the striæ appeared on the back, especially as "pressure areas" were not affected. Perhaps the predominance of lineæ on the right side was determined by either the underlying disease, by distension of the right hemithorax that was not recognised clinically, or (which is unlikely) by greater pressure on the skin on that side, because, to breathe more easily, the patient would tend to lie with the sound lung uppermost. No association was noted between the site of needle-puncture for the thoracentesis and the development of the striæ. The subsequent redistribution of striæ in position, length, and width, and the fading of some to white while new purple ones appeared is equally mysterious.

Parkes Weber [7] has shown special interest in striæ occurring "in the absence of the ordinary causes" and has suggested [8] that "the relative insufficiency of the cutis, which is a part-factor in the causation of the cutaneous striæ in so-called 'idiopathic' and post-infection cases, may be due to a *temporary* basophilic hyperpituitarism associated with the period of rapid growth at and following puberty." The striæ seen in cortisone treatment, and my suggestion, are therefore anticipated by 18 years.

The increased output of cortisone in pregnancy is satisfying confirmation of the old observation that rheumatoid arthritis and peptic ulcers improve spontaneously during pregnancy. If coloured lineæ striæ can be accepted as evidence of an increased production of cortisone, this simple clinical observation opens up many possibilities. How often do pregnant women with rheumatoid arthritis get purple lineæ? It is my impression that abdomens showing purple lineæ during pregnancy, and those young parous women with much striated abdominal skin, as flabby as a balloon half-filled with water, belong to a group where "stress" may be active. Perhaps it could be shown that purple striæ—their position on the abdomen favoured by distension—are associated with increased production of cortisone due to a combination of pregnancy and stress. It would be interesting to know whether they ever appear so suddenly as to be fully developed in seven days, and, if this happens, whether there is then an association with stress and not with distension.

Perhaps adolescents develop purple striæ with special ease; five of the six patients of Sprague et al.[4] on cortisone were aged 17 or less. My impression is that the younger the woman the more extensive are the purple striæ. Most people will be acquainted with the ragging that the lanky adolescent three-quarter comes in for in the rugger changing-room because someone spots the purple lineæ "gravidarum" on the upper outer part of his thighs: school and Service medical officers have a good opportunity of confirming this observation and noting in such cases any additional stress beyond that of adolescence. Perhaps something of interest might come of watching for persons with purple lineæ from

7. Weber, F. P. Rare Diseases and Some Debatable Subjects. London, 1947.
8. Weber, F. P. *Urol. cutan. Rev.* 1932, **36**, 731.

whatever cause and using them as donors to transfuse a series of patients with rheumatoid arthritis.

Finally it may be that "idiopathic" purple lineæ distensæ are a manifestation of primary tuberculous infection, and further observation may put their appearance on a level with phlyctenular conjunctivitis and erythema nodosum as a warning sign.

I am indebted to Dr. J. O. Terry for permission to publish this case.

C. ROMER
Worcester Royal Infirmary. Medical Registrar.

SIR,—Hurford and Snell [1] reported the development of purple striæ in 32 patients with pulmonary tuberculosis. They reviewed the literature on the subject and discussed the factors thought to be of ætiological importance. They concluded that the striæ result from several concomitant circumstances: (1) long-continued local stretching of the skin (related in their cases to the posture adopted during treatment); (2) endocrine activity at puberty; and (3) an inborn constitutional tendency to develop striæ in the presence of the preceding factors. They did not think that the site of the disease in their cases had any definite relation to the site of the skin lesions. An increase of weight occurred in less than half of their patients, and they thought that neither this nor toxæmia was important ætiologically.

Sprague et al.[2] record the development of reddish-purple striæ during 'Cortisone' therapy. The colour remained for several weeks after the drug had been stopped. Simpson [3] states that "where red and purple lineæ distensæ are found clinically, one can conclude with reasonable confidence that there is hypersecretion of adrenal cortical hormone." The following case is therefore of interest.

A male tailor's presser, aged 18, thought he had "been losing some weight recently." He had developed malaise a fortnight before going to see his doctor, and was then admitted to hospital with a temperature of 101·6°F, and a large right-sided pleural effusion of clear straw-coloured fluid, from which tubercle bacilli were subsequently cultured. No other abnormal physical signs were found. The patient was of medium height and asthenic build, and was reasonably well covered.

1. Hurford, J. V., Snell, W. E. *Tubercle*, 1943, **24**, 16.
2. Sprague, R. G., Power, M. H., Mason, H. L., Albert, A., Mathieson, D. R., Hench, P. S., Kendall, E. C., Slocumb, C. H., Polley, H. F. *Arch. intern. Med.* 1950, **85**, 199.
3. Simpson, S. L. *Lancet*, 1950, Sept. 23, p. 415.

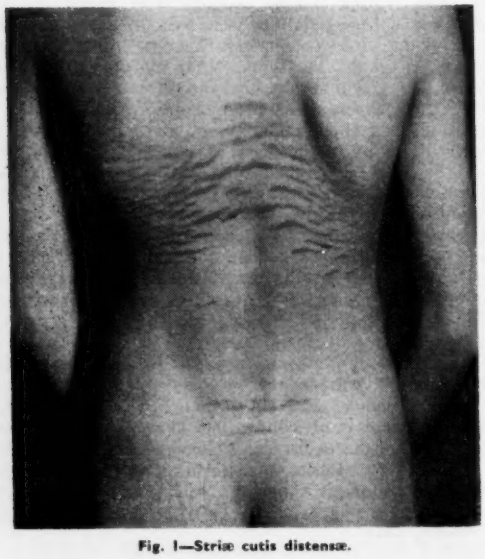

Fig. 1—Striæ cutis distensæ.

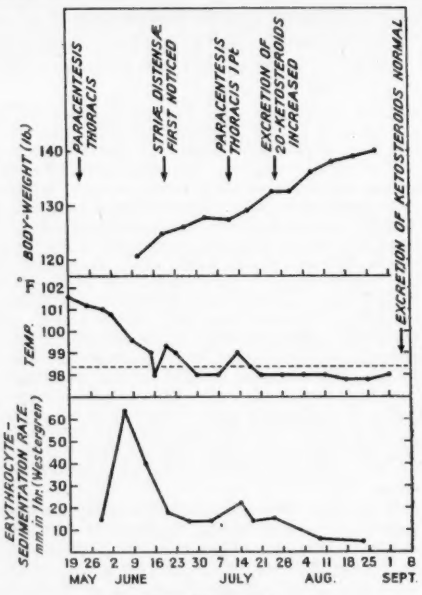

Fig. 2—Progress chart.

Treatment consisted in rest in bed, as much food as he could take, and extra vitamins, including 100 mg. of ascorbic acid t.d.s. by mouth.

Progress.—His appetite was poor for the ensuing three weeks, during which he seemed to become thinner. Thereafter he began to eat well, and he felt well during the rest of his stay in hospital. Five weeks after admission, during a routine examination, transverse purple striæ were noticed on his back in the lower dorsal region. At this time he had put on only 4 lb. in weight (from 8 st. 8 lb. to 8 st. 12 lb.). There was still slight fever. The erythrocyte-sedimentation rate (E.S.R.) had fallen to 18 mm. in first hour (Westergren). As the effusion showed no sign of absorption, a pint was aspirated eight weeks after admission. The lineæ had increased in extent, to involve the lumbodorsal, and to a slight extent the sacral, regions (fig. 1). Firm pressure with a glass slide produced incomplete blanching. A tourniquet test was therefore done (100 mm. mercury for five minutes), which showed slightly increased capillary fragility. Ten weeks after admission the patient's temperature had fallen below 98·4°F, the E.S.R. was 14 mm. in first hour, and he weighed 9 st. 6 lb. (fig. 2).

Investigations.—A blood-count showed 5,060,000 red cells per c.mm., Hb 96%, white cells 11,600 per c.mm. (polymorphs 55%, lymphocytes 32%, monocytes 10%, eosinophils 2·5%, basophils 0·5%). An ascorbic-acid saturation test (700 mg. given by mouth) showed that 180 ml. of urine in $2^1/_2$ hours contained 92 mg. of ascorbic acid. A glucose-tolerance test gave the following results:

Fasting	65 mg. per 100 ml.		
30 min.	110 ,, ,, ,,		No glycosuria
90 ,,	140 ,, ,, ,,		
120 ,,	120 ,, ,, ,,		

The blood-protein level was 7·5 g. per 100 ml. (albumin 5·0 g., globulin 2·5 g.). The serum-sodium level was 343 mg. per 100 ml., and serum-potassium level 19·6 mg. The urinary excretion of 17-ketosteroids was 8·9 mg. per day (normal in adult males 7–15), and 20-ketosteroids 6·5 mg. (normal 1–3).

Further Progress.—Thereafter, though the pleural effusion persisted, the clinical improvement was maintained. After fifteen weeks in hospital the patient was transferred to a pleural-effusion unit, at which time he felt very well and weighed 10 st. (an increase of 20 lb.). The E.S.R. was 5 mm. in first hour. The striæ had increased slightly in number and were still purple. The urinary excretion of 17-ketosteroids was 8·5 mg. per day and 20-ketosteroids 2·7 mg.

Biopsy of striæ showed in the centre of the specimen, beneath a rather atrophic epithelium, evidence of destruction

of elastic fibres, with disappearance of these elements in places, and clumping and fragmentation of the elastic in other areas. There was no evident pigmentation and no obvious local change in the blood-vessels.

Though only single estimations of ketosteroid excretion were possible, the change in the 20-ketosteroid values while the 17-ketosteroid excretion remained practically stationary appears highly significant.

Increased production of glucocorticoids is thought to mobilise glucose from the body proteins. The skin is the largest organ of the body, and represents about 16% of the total weight of an adult. It therefore seems reasonable to suppose that the skin supplies much of the protein used for gluconeogenesis, is weakened thereby, and becomes more liable to injury. Increased tension on skin so affected, due either to posture, as described by Hurford and Snell,[1] or to the accommodation of deposits of subcutaneous fat or a space-occupying lesion, such as an intra-abdominal tumour, may well produce the histological features of striæ cutis distensæ.

The normal glucose-tolerance curve seems to confirm Simpson's suggestion[4] that increased adrenal cortical output is balanced by a secondary hyperinsulinism. This may be a factor in determining the gain in weight.

I am indebted to Mrs. A. M. Robinson for the ketosteroid estimations; and to Dr. R. J. R. Cureton for histological examination of the skin. I am also grateful to Dr. H. C. Aston, of Bethnal Green Hospital, for permission to publish the case, and to Dr. E. F. Scowen for criticism and advice.

St. Bartholomew's Hospital, London. D'ALMERO KOK.

GERMAN MEASLES IN GIRLS' SCHOOLS

SIR,—Recently my youngest child, a girl of 6½, developed rubella. The attack upset the child mildly for a day or two, and at the end of 10 days she returned to school. (I understand that the latest Ministry circular recommends 7 days' exclusion from school from the appearance of the rash.) Apparently her return was too early to be in accordance with the "regulations," and she was told to keep away from the other girls.

I feel that enough is already known about the effects of rubella on the fœtus in early pregnancy to warrant revision of such "regulations" as these. For my part, I am thankful that in years to come my daughter is unlikely to present me with a maimed grandchild, consequent upon an attack of rubella in early pregnancy. It seems a pity that the "regulations" prevent her from conferring this great boon on her school-friends. It may well be that in time to come deliberate infection of girls with rubella during their school-days will be offered along with vaccination, diphtheria immunisation, and the rest.

General Hospital, South Shields. TERENCE G. ROBINSON.

UMBILICAL-CORD BLOOD

SIR,—Dr. Lehmann's letter earlier this year,[5] on the disturbance of prothrombin-time estimations by cleaning the glassware with soapless detergents, demonstrated the value of communications on purely technical matters in your correspondence columns. It is with this letter in mind that I record a finding that may be of assistance to workers in the field of rhesus blood-groups.

Occasionally samples of umbilical-cord blood are contaminated with an undue amount of Wharton's jelly. While this is usually removed by simple washing, as in the Coombs test, rarely the clumping of the test cells in suspension due to this viscous connective-tissue mucin is not overcome by washing; occasionally also a rapid slide-test is called for. When the phenomenon has been encountered in this laboratory we have found that the addition of a small amount of a commercial preparation of hyaluronidase (one drop of a solution containing 1 mg. in 10 ml., of saline to tube or slide) will prevent the clumping, which interferes with the interpretation of tests. It has been found, further, that much higher concentrations of hyaluronidase do not interfere with any routine blood-grouping procedures.

King Edward Memorial Hospital, Ealing, London, W.13. W. S. KILLPACK.

PYREXIAL TREATMENT OF ULCERATIVE COLITIS

SIR,—In the early days of treatment of general paralysis of the insane by artificial pyrexia, a male general paretic was admitted to one of my wards at the County Mental Hospital, Rainhill. In view of his very poor general condition, complicated by long-standing ulcerative colitis, it was at first thought inadvisable to attempt pyrexial therapy; but at the insistent request of his wife a modified course of 'Pyrifer' was given. It was observed with surprise that after the fourth intravenous injection the diarrhœa ceased. From that time onwards the stools showed satisfactory formation and there was no further evidence of colitis. Unfortunately the patient died a few months later as a result of his cerebral disease, and no conclusions could be drawn from the short period of apparent cure of the ulcerative colitis.

It was then brought to my notice that a male patient in another section of the hospital was suffering from ulcerative colitis of nearly two years' duration, and it was decided to study the effects of pyrifer. The following notes have been extracted from his case-sheet:

1934.—May 19: taken ill with diarrhœa, stools containing blood and mucus; afebrile. May 26: Flexner organisms isolated from stools; case notified to medical officer of health as bacillary dysentery. June 12: passing blood and mucus in stools: general condition failing. June 14: stools still show blood and mucus; no organisms of dysentery group now isolated; febrile, 99–103°F; general condition poor. June 28: Bowel condition as before; commonly febrile in evening; slight improvement in general condition.

1935.—April 26: diagnosed as chronic colitis; average of six motions daily, often containing blood and mucus.

1936.—March: condition unchanged. April 4 to May 11: course of twelve injections of pyrifer, producing on all occasions (except the third injection) temperatures of 103–104°F. No blood or mucus found in the stools after the third intravenous injection.

1937.—Feb. 17: no further diarrhœa; no change in mental state.

1941.—Nov. 12: reported diarrhœa. Nov. 14: Schmitz organisms isolated; 'Chinosol' exhibited for one month (details not given).

1942.—Jan. 15: clinically and bacteriologically clear; no evidence of colitis.

1947.—March 28: attack of vomiting; occult blood in stools; presumably acute gastritis (no evidence of active colitis).

1948.—April 13: reported to have loose stools. April 14: stools contained Sonne dysentery organisms, but no blood or mucus; treated with phthalylsulphalthiazole emulsion. May 28: six swabs have been negative (no evidence of active colitis).

1950.—May 31: no clinical signs of colitis.

In the ten years after leaving Rainhill Hospital in 1938 I was able to use this therapy in a few cases in another hospital. The results were reasonably good, but they were complicated by the fact that the pyrifer available during the war years produced less fever. The ampoules had all been filled before September, 1939, and their potency, in my opinion, decreased with time. Using the fresh supplies obtained in recent years, the previous pyrexial response has been observed.

I can draw no definite conclusions from the small number of cases of chronic ulcerative colitis which I have been able to treat in the course of mental-hospital

4. Simpson, S. L. *Post.-grad. med. J.* 1950, **26**, 417.
5. Lehmann, H. *Lancet*, 1950, **i**, 1133.

practice. But it seems worth recording that in the case described the patient, despite two attacks of dysentery, has been free from any clinical signs of chronic colitis in the fourteen years following treatment with pyrifer.

I am indebted to Dr. M. G. McColl, psychiatrist at Rainhill Hospital, for supplying me with the extracts of the case-notes.

J. ERSKINE HOWIE
Consultant Psychiatrist,
Liverpool Regional Hospital Board.

TROPHIC AND TROPIC

SIR,—Even if we do not completely agree with the opinion of Condillac and of some modern, logical positivists, according to whom Science is simply a well-constructed language, there is no doubt that precise terms indicate precise conceptions; and thus the terminological chaos in contemporary endocrinology is not, unfortunately, a simple linguistic phenomenon. A discussion of terms is thus welcome.

"Tropic" means direction, and thus "thyrotropic hormone" means a hormone directed towards the thyroid, and does not imply any further physiological conception. "Trophic" means nourishing and fixes an erroneous physiological conception, because this special anterior pituitary hormone stimulates the secretory function of the thyroid and not its nutrition. Deficiency of this pituitary hormone makes for hypoplasia of the thyroid and not for atrophy; these two terms are essentially distinct in Greek, atrophy indicating a nutritional phenomenon, and hypoplasia an organ inferiority, either congenital or due to disuse. We keep the Greek radicals in scientific terminology, not to show off our classical learning, but because Greek is a language which expresses with the greatest precision various aspects of phenomena. Thus, the terms "thyrotropic" and "gonadotropic" are more correct.

May I avail myself of this opportunity to protest against another terminological cause of confusion in endocrinology—the use of initials instead of well-constructed terms? Why L.H., I.C.S.H., L.T.H., and other confusing constructions reminding us of military bureaucracy, and manifesting laziness and even slovenliness of thought?

London, W.1. A. P. CAWADIAS.

REVOLT AT KINGSTON

SIR,—You will not wish your pages to carry, each week, a letter in which Dr. Morgan accuses me of untruth and I repudiate his statements as being inaccurate or biased. His letter last week answers none of my points and reveals an ignorance of the National Health Service which it is clear no fact or argument can alter.

However, he introduces a new principle to the health service which must be rejected. He suggests that appointment to the staff of a hospital by a regional hospital board does not make one a member of the staff of that hospital unless Dr. Morgan agrees. From his letter it would appear that general practitioners who hold no appointment, but by invitation of the hospital management committee visit their patients in hospital, are members of the staff while consultants appointed by the board are not to be so considered. This strange doctrine clarifies and emphasises my point that no meeting of those actively working at the Victoria has ever been called.

The issue, however, goes far beyond that. The scheme for the reorganisation of the Kingston group has the full approval of all responsible for the hospital service of this country, and by this time next year the farcical position adopted by one-fifth of the general practitioners in the group will be forgotten except for a lingering shame in their own minds.

Kingston Hospital, Surrey. D. STARK MURRAY.

MASS MINIATURE RADIOGRAPHY

SIR,—With reference to the letters from Dr. Beynon (Nov. 11) and Dr. James (Nov. 18), the no-undressing technique was used in the mass-radiography unit at the Royal Naval Barracks at Chatham in January, 1947. A survey of Admiralty civilian employees was undertaken at that time, and it was found that there were not enough chest covers for female examinees. They were therefore radiographed clothed, and the results were so good that since then I have not hesitated to use the technique whenever it has been more convenient to do so.

JAMES LEES
Lee-on-Solent, Hants. Surgeon Commander.

REGISTRARS

SIR,—It would be as serious to underrate the value of the large non-teaching hospital to the registrar in training as to fail to appreciate the fact, already well expressed in your correspondence columns, that the registrar is an essential part of the staff of such a hospital. Without the experience of this type of appointment behind him, the new consultant, fresh from a registrar post in a teaching hospital, is likely for some time to lack the technical competence necessary for the proper charge of hospital beds.

If the Ministry's proposals become operative, in the scramble for the services of the few remaining registrars the non-teaching hospitals must not be sacrificed to the claim that all the training is done at the teaching hospitals.

County Hospital,
Whiston, near Prescot,
Lancashire. J. A. MARTINEZ.

SIR,—It took the Collings report to show how far the general practitioner had been separated from the hospital; and it has taken the Ministry's circular on registrars to show how far the hospital man has been separated from general medicine.

Dr. Talbot Rogers, in his article of Nov. 25, has thrown a very useful plank, hewn from the dead bulk of the circular, across the gap; but the serious imbalance in the arrangement and the qualities of medical service will not be corrected until the hospital doctor and the practitioner both vanish, and a doctor takes their place—until the houseman–registrar–consultant progression, based on a single point of distribution of professional service and a single standard of quality, applies in each field of medical activity.

When the activities of the local executive council, the regional board, and the hospital management committee, and of the school, industrial, and local health services are put into a single framework, based on area management under light Ministry control, we shall have an economy which will provide all the consultants and registrars we need, and some money to spare for over-all development, health centres included.

W. J. CRABB
Secretary, Fulham and Kensington
Hospital Management Committee.
St. Mary Abbots Hospital,
London, W.8.

Public Health

Poliomyelitis

IN England and Wales notifications of poliomyelitis during the week ended Dec. 2 were: paralytic 90 (111), non-paralytic 38 (19); total 128 (130). The figures for the previous week are in parentheses. Uncorrected notifications for the corresponding week in 1947 and 1949 totalled 106 and 157.

Total uncorrected notifications for 1950 up to and including the week under review are 8379. The corresponding figures for 1947, 1948, and 1949 are 8927, 2272, and 6483.

Parliament

Domiciliary Physiotherapy Services

IN the House of Commons on Dec. 4 Mr. KENNETH THOMPSON pointed out that some patients with, for example, heart-disease, or some elderly people with advancing infirmity, could not go to hospitals and clinics for physiotherapy. To meet their needs several regions had worked out contractual arrangements with outside agencies, such as district-nursing associations and private practitioners, to give the patients physiotherapy in their own homes. Such arrangements appeared to have had the blessing of the Ministry of Health. No fewer than 26 district-nursing associations were operating a mobile service of this kind. The regions had now received instructions which they interpreted as a direction to end their contracts with the district-nursing associations. Mr. Thompson was uncertain whether the Minister of Health was seeking to cancel the present arrangements; to secure the fullest use of a skill in short supply; to ensure that the patient received adequate and proper treatment; or merely to economise. He had not been able to discover any complaints about the service given by the district-nursing association, which cost 9*s*. per treatment in the Liverpool area. If a patient had to be taken to hospital for treatment the average cost for an ambulance would be, he thought, about 20*s*. a trip.

Mr. ARTHUR BLENKINSOP, parliamentary secretary to the Ministry of Health, in reply, gave an assurance that patients who required physiotherapy in their homes on medical grounds would continue to receive it. But domiciliary treatment of this kind was, he insisted, a poor second best compared with that provided in a properly equipped hospital or clinic, and the Ministry would regard it as an exceptional case that should be treated at home. With old people, as with others, the important thing was to give active treatment, and not to provide domiciliary treatment on a sort of permanent basis. The whole trend of modern medical treatment was to ensure the active participation of the patient, as well as of the practitioner and specialist. Apart from the limited amount of equipment that could be provided with a domiciliary team, it was not economical that trained staff should be wandering about the countryside instead of providing treatment for several patients together in a clinic. In the experience of the Ministry with contracts of this sort there was a danger of a gradual growth of demand unwarranted on medical grounds. There must be reasonable control over how long the domiciliary treatment should go on, ensuring that patients should in due course continue their treatment in hospital. The Ministry had entered into discussions with the regional hospital boards on the best way of ensuring that there should be no loss of treatment for those who must have it at home.

QUESTION TIME

Hospital Boards and Publicity

Mr. HECTOR MCNEIL, Secretary of State for Scotland, said that representatives of the press regularly attended the meetings of regional hospital boards, and the boards were grateful for the help and coöperation they received from the press. Whether the regional board minutes were placed in the public libraries was within the discretion of the boards, who took the view, which Mr. McNeil shared, that this was not the best way of securing publicity. They were adopting other means, and he was encouraging them to use those means to the full.

Tuberculosis Nurses

Mr. ANEURIN BEVAN stated that the numbers of nursing staff employed in sanatoria and tuberculosis hospitals were as follows:

	Full-time	*Part-time*
Trained nurses	2074	323
Enrolled assistant nurses	967	325
Student nurses	1372	—
Other nursing staff	1003	424
	5416	1072

Returns from local health authorities showed that nurses engaged as tuberculosis visitors number approximately 360 full-time and 1130 part-time.

Mental-hospital Patients and Inoculation

Mr. S. P. VIANT asked the Home Secretary what procedure was adopted for the inoculation of persons confined in mental hospitals who were rational in most respects and expressed objection to these injections; and whether his regulations allowed such persons any right of refusal.—Mr. BEVAN replied: There are no regulations for inoculation of persons in mental hospitals; but if a patient expressed a rational objection to an injection it would not be administered.

Cuts in Numbers of Registrars

Mr. J. K. VAUGHAN-MORGAN asked the Minister of Health what was the present establishment of hospital registrars and senior registrars for the South West Metropolitan region; and to what figure these would be reduced when the proposed cuts were implemented.—Mr. BEVAN replied: About 320 in each case (including the teaching hospitals in the area). The new figures are respectively 151 and 83.

Mr. NIGEL DAVIES asked the Minister whether he was aware that, whereas he had proposed that the number of hospital registrars and senior registrars in England and Wales should be cut from 2800 to 1700, it was proposed that the cut in the North East Metropolitan region should be from approximately 300 to 134; and what was the reason for this greater proportionate cut in this region.—Mr. BEVAN replied: The reduced number represents the share of the total which I think is appropriate to this region, taking into account its population, the number of consultants, the available training facilities, and the number of beds in that region as compared with the country as a whole.

Specialist Training

Mr. DAVIES asked the Minister whether, in order to ensure adequate training and fair opportunities for doctors seeking to become specialists, he would arrange for a transfer system whereby registrars of non-teaching hospitals should spend a portion of their training period at teaching hospitals, and whereby registrars at teaching hospitals should spend a proportion of their time at non-teaching hospitals.—Mr. BEVAN replied: I have already made this suggestion to hospital boards.

Expansion of Consultant Services

Mr. E. A. HARDY asked the Minister why he did not expand the consultant services to the extent proposed in the pamphlet, *The Development of Consultant Services*, published by His Majesty's Stationery Office.—Mr. BEVAN replied: It is no use trying to increase the number of consultants faster than we can increase the beds and other facilities available to them.

Capitation-rate

Mr. STANLEY EVANS asked the Minister whether he would revise his regulations so that general practitioners in the National Health Service were paid at a higher capitation-rate in respect of the first 1000 or 1500 patients on their list, and at a lower rate as their lists became larger.—Mr. BEVAN replied: I have myself always preferred the idea of a graduated system which would discourage the accumulation of over-large patient lists and encourage the better balanced practices. It is not always easy to translate it into fact, but I want to go into it very thoroughly with the profession in my discussions with them.

Kingston Victoria Hospital

Mr. J. A. BOYD-CARPENTER asked the Minister whether he had now considered the proposal of the British Medical Association that a public inquiry be held in connection with the dispute as to the future use of the Kingston Victoria Hospital; and what action he proposed to take.—Mr. BEVAN replied: The future of the hospital has been very fully and carefully reviewed, both by the regional board and by the Ministry of Health, as well as having been the subject of debate in the House of Commons. I certainly do not think that the proposed inquiry would either be appropriate or would add to our knowledge, and I see no reason to intervene.

Mr. BOYD-CARPENTER: Is the Minister aware that one of the major reasons why local opinion feels that injustice has been done is that no opportunity has yet been given for local opinion to express itself directly to those responsible? Would not a solution such as that suggested by the British

Medical Association give an opportunity, so far denied, for local opinion to express itself?—Mr. BEVAN: I do not believe that there exists in Great Britain any better court of inquiry than the House of Commons itself, especially on a matter of this kind. If the hon. Gentleman thinks that the matter has not been adequately ventilated he can seek further opportunities.

Mr. SOMERVILLE HASTINGS: Would not the Minister agree that the opinion of experts in hospital management is more important than local opinion?—Mr. BEVAN: Yes, of course. This is the view which has been taken by the management committee and the regional hospital board, who have had all the facts before them, and, as I have said, the House of Commons as well. If the matter is not yet sufficiently ventilated I shall be most happy to recount the facts again.

Hospital Purchases

Mr. ANTHONY GREENWOOD asked the Minister whether he would make a statement on the progress achieved in setting up a central purchasing organisation for hospital requirements.—Mr. BEVAN replied: Central contracts are placed for X-ray equipment and films, laboratory and blood-transfusion apparatus, spectacles, rubber goods, and certain scarce and costly drugs. Hearing-aids are purchased under contract by the Post Office, surgical and orthopædic appliances by the Ministry of Pensions, and occupational therapy equipment and invalid tricycles by the Ministry of Works. I intend, as soon as practicable, to extend these arrangements to cleaning materials and hardware, bedding, cotton and woollen textiles, drugs and dressings and other common-user goods. Net savings cannot be precisely calculated but are not less than £2½ to £3 million.

Diary of the Week

DEC. 17 TO 23

Monday, 18th

INSTITUTE OF OPHTHALMOLOGY, Judd Street, W.C.1
5.30 P.M. Dr. H. J. Dartnall: Visual Pigments.

Tuesday, 19th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Prof. F. J. W. Roughton, F.R.S.: Respiratory Chemistry of the Blood.

INSTITUTE OF OPHTHALMOLOGY
5.30 P.M. Mr. P. McG. Moffat: Ocular Tuberculosis.

EUGENICS SOCIETY
5.30 P.M. (Burlington House, W.1.) Mr. Paul Bloomfield: The Ideal of an Elite.

Thursday, 21st

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Professor Roughton: Respiratory Chemistry of the Blood.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
4.30 P.M. Dr. M. A. Partridge: Psychiatry lecture-demonstration.

Births, Marriages, and Deaths

BIRTHS

GRANT.—On Dec. 2, in London, the wife of Dr. R. N. R. Grant—a daughter.

HETREED.—On Dec. 2, in Cardiff, the wife of Dr. Vincent Hetreed—a son.

HOLGATE.—On Nov. 28, in Leeds, the wife of Dr. J. A. Holgate—a son.

HUTCHISON.—On Dec. 6, in Glasgow, the wife of Dr. B. S. Hutchison—a son.

RACE.—On Dec. 1, in London, the wife of Dr. R. R. Race—a daughter.

SHRIGLEY.—On Nov. 30, the wife of Dr. J. A. Shrigley—a daughter.

STONE.—On Dec. 5, in Manchester, the wife of Dr. Richard Stone—a daughter.

DEATHS

CALDWELL.—On Dec. 3, at St. Albans, Alfred George Caldwell, M.D. R.U.I., D.P.H.

DAVIES.—On Dec. 5, at Stroud, Glos, Albert Barnes Davies, M.R.C.S., aged 89.

EMERSON.—On Dec. 2, at Pershore, Worcs, Herbert Bree Emerson, M.R.C.S., aged 82.

FORREST.—On Dec. 7, at Harpenden, Herts, James Aquilon Forrest, M.B. Edin., surgeon captain, R.N. retd, aged 79.

FREW.—On Dec. 1, John Frew, M.B. Glasg., D.P.H.

LAWSON.—On Dec. 3, in London, Douglas Lawson, F.R.C.S., lieut-colonel, R.A.M.C. retd.

MARTYN.—On Dec. 5, at Paignton, Gilbert John King Martyn, B.A., M.D. Camb., D.P.H., aged 81.

Notes and News

THE REGISTRARS

IN a statement issued at the beginning of this week, the Socialist Medical Association calls for immediate withdrawal of the Ministry of Health's recent circular on registrars.[1] "The Circular shows a total failure to understand the importance of the contribution made by registrars to the hospital service. . . . The Circular fails because it treats the question of registrars in isolation, instead of as an integral part of the whole problem of staffing the hospitals, and the other medical services. The wholesale dismissal of registrars which it proposes will . . . lead to an increase in waiting lists, diminish turnover, and in certain cases will lead to the closure of beds." The association takes particular exception to the proposal that registrars should join the Forces or the Colonial Medical Service, since it knows of no evidence that this country is over-doctored. The two main causes of the present disproportionate number of registrars are: (*a*) failure to plan nationally the best use of medical man-power; and (*b*) the increasing difficulty of entry into general practice. The following are among the measures which, according to the association, are essential before present appointments are terminated: (1) a national policy on the medical staffing of hospitals must be formulated; (2) the surveys now being made of hospital establishments should be expedited; (3) as soon as (1) and (2) are completed, the necessary expansion of the consultant services should be speeded up ("where it is found that registrars are in fact doing consultants' work, consultant posts should be created and advertised"); and (4) hospital boards should be instructed to make no further appointments of part-time consultants. The association claims that the suggestion, contained in the circular, that general practitioners should act as part-time clinical assistants, to replace registrars, is clearly impracticable. Finally, the question of entry into general practice requires urgent reconsideration. Here the association proposes: (*a*) that the maximum number of patients on each principal's list be reduced immediately to 3000; (*b*) that the Medical Practices Committee be reformed; (*c*) that the constitution of local executive councils be changed so that vested interests cannot prevent recognition of the real needs of the area; (*d*) that local authorities be encouraged to give more help in housing new general practitioners; (*e*) that first consideration be given to encouraging entry into practice in the under-doctored areas, by inducement payments; (*f*) that there should be a retiring age for all practitioners in the National Health Service; and (*g*) that the right to immediate free choice of doctor should be restored. "We make these suggestions," the statement concludes, "without prejudice to our policy that fundamentally the solution to the problems of general practice is a salaried service based on Health Centres."

PARKINSON'S DISEASE

Mr. Buchler[2] has been a sufferer from Parkinson's disease for 7 years and writes with the commendable object of helping his fellows. In his case the affection was possibly a sequel, after 21 years, to an attack when he was in China of "black" smallpox, in which he states that he lay comatose for three weeks. In view of the nature and object of the book he tells us very little about the various forms of treatment which he has received, and their comparative merits. "My favourite assortment (taken separately three times daily) is thirty drops belladonna tincture and one tablet hyoscine. . . . Now I take 3 benadryl capsules daily." However, he advises a fortnightly visit to the doctor (and comments upon the antiquity of the literature supplied in the waiting-rooms of many practitioners) one object of these frequent visits being to inquire after any new remedies. A good deal of advice is given upon the method of walking, and the procedure when a parkinsonian does his own shopping; but the author recognises quite candidly that the disabilities of the subjects of this disease are by no means uniform, and hence that the same method may not be suitable in all cases; certainly his recommendation to swing a stick, umbrella, or shopping-bag as an aid to walking will not appeal to all. "I have always, strangely enough, found it easier to walk at night than in the daylight." It would be interesting to know how general this

1. See *Lancet*, Nov. 11, 1950, p. 537.
2. Parkinson's Disease: Advice and aid for sufferers of Parkinson's Disease and other physical disabilities. By WALTER BUCHLER. London: Walter Buchler. 1950. Pp. 79. 5*s*. 6*d*.

experience is among parkinsonians. Undoubtedly it is true in some cases and one wonders whether the difference is due, not to any factor of light or darkness, but to some change in metabolism in the later hours of the day.

A large part of the book is taken up with rather platitudinous counsel about the conduct of life generally that would apply equally to the disabilities and limitations of normal old age. Thus the parkinsonian is advised upon the interest to be expected from investments, the choice to be made among the simultaneous programmes of the B.B.C., the characteristics of various newspapers, and the engagement of housekeepers, together with matters of more immediate import to him, such as the method of rising from the lavatory seat and the difficulties in the use of knife and fork. Various suitable hobbies are discussed, ranging from speculation on the Stock Exchange to the formation of a herbarium of weeds. The book has an excellent index such as is lacking in many books which have much greater need for it; a random glance at the items—astronomy, cabbage, crossword puzzles, marriage, socks, soles, soup, and so on—shows the breadth of the author's conception of parkinsonism.

Mr. Buchler is a professional writer and no-one will object to his use of the disease from which he suffers to provide another book. He has written several millions of words on his typewriter, using one finger of each hand, a practice which he had adopted before the disease developed. He has thus solved one of the greatest problems—that of writing: as he says, "even to sign one's name becomes a hard job."

In the autumn of 1948 he read in a newspaper of a fellow-sufferer in this country who had gone to the United States for an operation on the brain to be performed by a surgeon at St. Louis, and he decided to do the same himself although he does not appear to have known very much about the success of the operation on his fellow-countryman. Every parkinsonian will applaud his wisdom in travelling "tourist" and thereby evading the manipulative difficulties of dressing for dinner. He goes on to give a topographical description of the *Mauretania*, in so far as the ship is accessible to passengers, and pays a tribute to the immediate help in every difficulty which he received from the staff. In New York his medical advisers decided against the proposed operation and he returned by air. Certainly if a man, travelling alone, can cross the Atlantic by ship and by plane with great enjoyment, his disabilities do not justify an operation of which the risks and effects are but little known. In conclusion, one may congratulate the solitary traveller on his courage, and his American friends on their wisdom in sending him home intact.

A NEW MEDICAL JOURNAL

THE first issue of *Medicus*, which has just arrived from Pakistan, contains articles by European as well as local workers. Mr. D. M. Stern, of the West Middlesex Hospital, discusses the use of veratrum viride in eclampsia: Dr. M. A. Shah and Dr. G. M. Awan, of Karachi, describe the treatment of trachoma with benzyl cinnamite; and Dr. A. R. Piracha deals with cardiac emergencies. The other articles include a note on Love as a Medical Problem, in the historical section which is to be a regular feature. The editor, Dr. M. S. Quereshi, F.R.C.S.E., M.R.C.O.G., will have the help of an editorial board consisting of Prof. Shiyaat Ali, Prof. Muhammad Basheer, Prof. Y. M. Khan, Prof. N. A. Quraishi, and Prof. Muhammad Yusuf. Dr. Quereshi says that *Medicus* is intended to satisfy the great need for a really good medical journal in Pakistan. Judging by the first issue, it is likely to succeed.

BRISTOL FASHION

BOOKLETS on local health services are often as indigestible as cold suet pudding, and about as dispiriting. In tempting his fellow citizens to know and use the amenities of the Bristol health department, Dr. R. H. Parry[1] the medical officer of health, shows the resource and sagacity of a Mrs. Beeton, garnishing his plain dish of facts with such well-chosen pictures, and such an appetising display of good paper and type, that all must relish it. The health services in Bristol are presumably of the same order as those elsewhere; but this book reveals the pride the health department takes in them and the thoroughgoing efforts made to tell people about the care to which they are entitled. They are told who is responsible for every section of the department's work, and where to apply for help in any necessity or emergency to do with health. The pictures interpreting the text have been gathered from various sources, including *Illustrated*, *Topical Press*, and the Bristol *Evening Post* and *Evening World*, and they have what is called in the trade "human interest." The danger of human interest is sentimentality; but these pictures avoid it. They bring to mind that Bristol is a seaport, that people live in good houses and bad, that children are by nature confident, that old people like company, that a dentist at work can provide a satisfying æsthetic pattern—anyhow for the looker-on. They are, in current slang, just the job.

1. Health Services in Bristol. Department of Public Health, City and County of Bristol. Pp. 38. 1s.

DEATH OF MR. BARTLETT

IN *Did Adelaide Bartlett . . .?* [1] Gordon Gwyn (a pseudonym concealing the identity of a practising anæsthetist) picks up the thread of an unsolved mystery of the '80s, and attempts to unravel it in the light of modern medical knowledge. In a manner by turns light-hearted and dramatic, he unfolds the story of the strange marriage of immature Adelaide de la Tremoville to pompous Edwin Bartlett with his odd ideas about the marriage bed. The familiar triangle is completed by a particularly ingenuous cleric; and the story moves to its climax with the strange but expected death of the husband. The manner of his death clearly needs an anæsthetist to explain it, and Gordon Gwyn discusses ably the evidence at the trial and gives his own conclusions. The main facts are taken from the authentic records, and the manner of presentation is up to the standard of the better mystery stories of fiction.

"YOU AND YOUR HEART" [2]

FIVE American authorities have collaborated to produce a book whose aim is to give the layman a concise non-technical explanation of the heart and circulatory system, believing that in this way they may prevent over-anxiety in the patient with heart-disease and in his relatives, and put at rest the fears of those in whom heart trouble is only imaginary. They also give some general rules about the mode of life to be adopted by the patient, always with the emphasis on encouragement and optimism. Finally they discuss prevention, and give a brief account of the most pressing problems in the care of patients with cardiovascular diseases, and the American organisations attempting to solve them. They cover the anatomy and physiology of the circulation; congenital, coronary, and rheumatic heart-disease; high blood-pressure; and diseases of the peripheral blood-vessels.

It is difficult to know how much a book of this type, however clearly and simply written, would help the layman of this country. In the introduction "doctors as a group" are described as "unable or unwilling to explain clearly, in simple terms, some of the things that patients most want to know." If this is so, perhaps it is the doctor rather than the patient who should read this book.

MAN-EATING SHARKS

Mr. V. M. Coppleson, of Sydney, states that each year about 4 or 5 attacks are made by sharks on human beings on the coast of Australia.[3] There have been 77 attacks on bathers in the last thirty years, and 33 on pearl-divers in the ten years 1926–36. There is also evidence that sharks sometimes eat dead bodies. Attacks have often been made on manned rowing-boats, and on such occasions the shark is apt to lose a tooth, by which the species (always the Blue Pointer in Australian waters) can be identified. Sometimes human limbs have been recovered from sharks' stomachs after the lapse of more than a week and have then shown strangely few signs of digestion.

Thirteen years ago the experiment was made of laying a long net off the beach each evening and hauling it away by trawler each morning. Areas so "meshed" have since been completely free from attacks by sharks on men. Though the risk to bathers is numerically infinitesimal, these accidents, as Mr. Coppleson says, are horrible and the victims are usually people full of life and youthful vigour.

1. London: Christopher Johnson. 1950. Pp. 180. 9s. 6d.
2. By H. M. MARVIN, M.D.; T. D. JONES, M.D.; I. H. PAGE, M.D.; I. S. WRIGHT, M.D.; and D. D. RUTSTEIN, M.D. New York: Random House. 1950. Pp. 306. $3.
3. *Med. J. Aust.* Nov. 4, 1950, p. 680.

University of Oxford

The Weldon prize has been awarded to Prof. L. S. Penrose, M.D.

University of Dublin

On Dec. 7 the following degrees were conferred:

M.D.—R. W. Barter, Henry FitzGibbon, J. M. Johnston.

M.A.O.—C. L. S. Archer, M. B. Flanagan.

M.B., B.Ch., B.A.O.—A. C. Allen, T. H. Bewley, J. N. Cockrill, H. A. Devlin, Norman Furlong, Helen M. Hackman, Anna J. Hendly, J. O. Hunter, W. G. Hutchinson, P. E. A. Blake Knox, R. V. Lea, E. W. Lillie, D. D. Macdonald, N. R. McNutt, Sara K. Mitchell, F. H. Moore, H. J. Neethling, A. T. F. ffrench-O'Carroll, David Romney, Arthur Ross, M. J. Sweeney, J. P. B. Tuohy, Grace M. F. Yorke.

National University of Ireland

Dr. John Dunne has been elected to the professorship of psychiatry at University College, Dublin.

Dr. Dunne graduated M.B. N.U.I. in 1922 and he also holds the D.P.M., and D.M.D. After qualifying he held the post of assistant medical officer at Grangegorman Mental Hospital, Dublin, till in 1930 he was appointed R.M.S. at Sligo-Leitrim Mental Hospital. He returned to Grangegorman Hospital to take up his present position as R.M.S. there in 1937. He has published papers on the malarial treatment of G.P.I. and on dementia præcox.

Royal College of Physicians of Edinburgh

Sir David Henderson has been re-elected president of the college for the ensuing year and Dr. W. A. Alexander vice-president. The following office-bearers have been elected:

Members of Council: Dr. W. A. Alexander, Dr. D. J. A. Kerr, Dr. D. N. Nicholson, Dr. R. M. Murray-Lyon, Dr. J. G. M. Hamilton, and Dr. T. Anderson; treasurer, Dr. J. Alastair Bruce; secretary, Dr. J. Halliday Croom; hon. librarian, Prof. D. M. Lyon; registrar, Dr. Croom.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on Dec. 4, with Mr. Walter Galbraith, the president, in the chair, the following were admitted fellows of faculty *qua* physician:

J. O'D. Alexander, Thomas Chelvarajah, J. S. Creighton, A. S. Douglas, Ravindra Motichand Kapadia, Joan B. Landsman, Syed Abdul Mannan, G. C. Provan, W. G. Whyte.

Irish Conjoint Board

On Dec. 1, the following candidates were admitted licentiates in medicine and midwifery, having passed the final examination of the board:

Eleanor A. Bolger, Alice Boushel, J. P. Cahill, James Connolly, Dorothy J. Davis, M. J. Foley, Carmel P. Gibson, V. J. Haslan, Mabel Jackson, Mary J. McCann, Helena M. McManus, M. P. McPartlin, Sheila Moriarty, Maureen B. O'Gorman, A. P. O'Kelly, M. P. O'Reilly, Sheelah K. O'Shea, R. A. Power, S. J. Raverty, Alexander Rudnick, W. E. Rutherford, Dympna E. Sharkey, W. S. Snow, C. M. Watson, Avril M. Webb, J. R. White, J. E. Whyte, C. E. Wilson.

Industrial Injuries Advisory Council

Prof. R. E. Lane, F.R.C.P., has been reappointed, and Sir Hugh E. Griffiths, F.R.C.S., and Prof. J. M. Mackintosh, F.R.C.P., have been appointed, to the council.

German Medical Congress

A meeting of the Deutsche Gesellschaft für innere Medizin will be held at Wiesbaden from April 2 to 5. Further information may be had from Prof. Fr. Kauffmann, (16) Wiesbaden, Städtische Krankensanstalten.

Kingston and Malden Victoria Hospital

At the end of last week Kingston Group Hospital Management Committee reaffirmed its decision to convert this hospital into a gynæcological unit. The general-practitioner staff have refused to act on notice to quit the hospital (see *Lancet*, Nov. 11, 1950, p. 527); and they have been having the entrance picketed. (See also p. 829.)

Sight Tests

To prevent unnecessary sight tests, the Minister of Health has asked ophthalmic medical practitioners and ophthalmic opticians taking part in the supplementary ophthalmic services to ensure

before they test a patient's sight, that the name and address of the optician who supplied the patient's previous glasses, and the date of the last sight test, are entered on the application form; and

that sight is not tested without the permission of the Ophthalmic Services Committee if it has been previously tested within the preceding 12 months, except when in their view the need for a further sight test appears to be urgent; or the patient's G.P. has been informed that the patient should have a further examination within 6 months of the test.

Northern Regional Hospital Board

Mr. James South has been appointed chairman of this Scottish board in place of Mr. Donald Macpherson, who has resigned.

Institute of Psychiatry

On Wednesday, Feb. 14, Dr. Manfred Bleuler, professor of psychiatry in the University of Zürich, will give a lecture at the institute, Maudsley Hospital, London, S.E.5, on Acromegaly and Acromegaloid: Psychiatric and Genetic Aspects.

Hearing-aids

At a symposium on this subject to be held on Wednesday, Jan. 10, at 6.30 P.M., at the London School of Hygiene, Keppel Street, W.C.1, by the British Institute of Radio Engineers, Mr. E. R. Garnett Passe, F.R.C.S., is to speak on the clinical aspect of deafness and the possibilities of its alleviation medically and by hearing-aids.

Conference on Social Medicine

The social medicine research unit of the Medical Research Council proposes to hold a conference in London on problems of research, with special reference to method, on April 28 and 29. Professional workers in the various fields of social medicine can obtain further information from Dr. J. N. Morris, S.M.R. Unit, Central Middlesex Hospital, Acton Lane, London, N.W.10.

Care of the Old

Speaking at the opening of an old people's home at Balnagask, Aberdeen, on Dec. 6, Sir Andrew Davidson, chief medical officer of the Department of Health for Scotland, said that lately it had been calculated that ordinarily a general practitioner averaged about 3 visits per annum to a patient's home and just under 3 visits per annum by the patient to the surgery; whereas for elderly patients the average was $7\frac{1}{2}$ visits to the home and $2\frac{1}{2}$ to the surgery. He continued, however: "Too often, when considering the needs of the elderly, we put the cart before the horse. Too often, when we think of health matters, our minds turn first to hospitals and second to hostels and only third to the patient's own home. Actually, though a hospital does excellent and very necessary work, a hospital is the last line of defence; the fact that a patient has become ill enough to require admission to hospital may be taken as an indication that the health-promoting and disease-preventing services have been unsuccessful; and a community that requires very large or very numerous hospitals is an unhealthy and miserable community. Let us realise, quite definitely, that the emphasis must be placed the other way. From the point of view of the happiness of the individual, most people are infinitely happier in their own homes than elsewhere; and of those who become too frail to live an independent existence in their own homes, the vast majority are much happier in hostels such as Balnagask than in a hospital. . . . Fortuitously economic factors line up with the happiness of the individual. . . . £2 a week at home and happier, or £3 10s. a week in a hostel, or anything from £8 upwards in a hospital."

The new I.C.I. film catalogue contains a list of all films produced by the company, including 25 for medical audiences only. They may be borrowed free of charge from the I.C.I. film library, Bolton House, Curzon Street, London, W.1, from which copies of the catalogue may also be obtained.

Appointments

ABLETT, J. J. L., M.B. Lond., D.A.: anæsthetist, United Leeds Hospitals.

ANNING, S. T., M.A., M.D. Camb., M.R.C.P.: dermatologist, General Infirmary, Leeds.

BARABAS, ERVIN, M.D. Prague: psychiatrist, St. George's Hospital and Coton Hill Hospital, Stafford.

BORRIE, P. F., M.B. Camb., M.R.C.P.: dermatologist, Moorfields, Westminster, and Central Eye Hospital.

PARSONAGE, M. J., M.B. Manc., M.R.C.P., D.C.H.: neurologist, United Leeds Hospitals.

RICHARDS, B. W., M.R.C.S., D.P.M.: deputy medical superintendent, Coleshill Hall Institution for Mental Defectives, Warwickshire.

SMYTH, M. J., M.CH. N.U.I., F.R.C.S.: consulting surgeon, Jockey Club, and consulting surgeon, National Hunt.

Appointed Factory Doctors:

MOLONY, J. G. M., M.B. Dubl.: Truro district, Cornwall.

PEARSON, JAMES, M.B. Glasg.: Paisley district, Renfrew.

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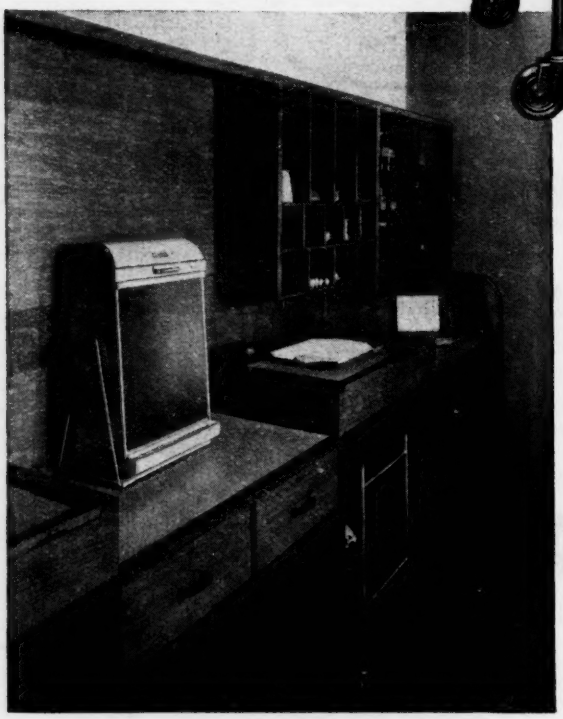

Above — Baby changing Trolley with 'FORMICA' surfaces. (Fabricated by Porter London Products Ltd.)

Left — Dispensary in St. George's Hospital showing 'FORMICA' fitted to bench tops. (Fabricated by Permatops Ltd.)

Below — Bedside Table with 'FORMICA' top. (Fabricated by Porter London Products Ltd.)

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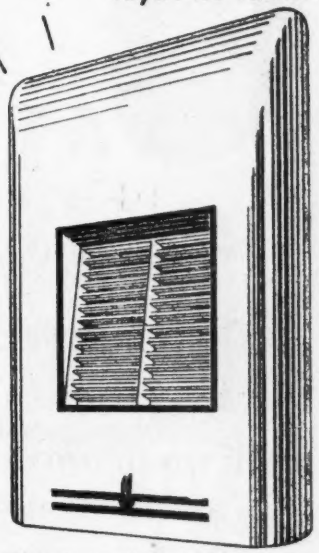

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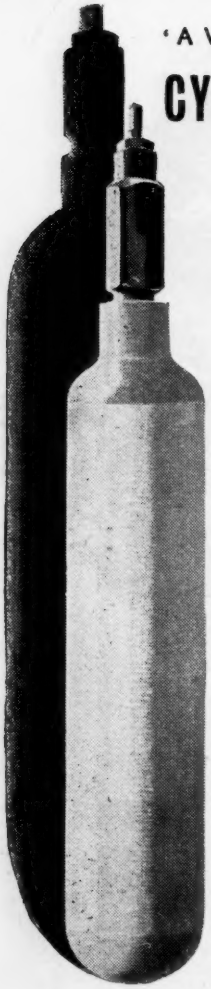

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* MOSS, H. K. and HERRMANN, L. G. *Amer. Heart J.*, 35: 403-8, March, 1948.
NICHOLSON, J. H. and FALK, A. *New England J. Med.*, 233: 556-9, November 8, 1945.
B.M.J. Editorial reference in February 25th, 1950 issue.

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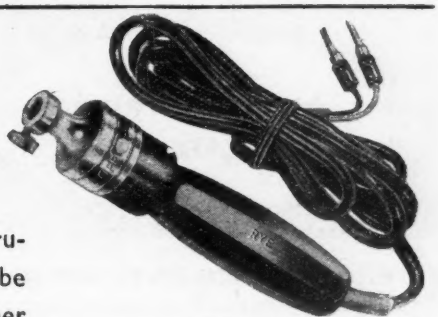

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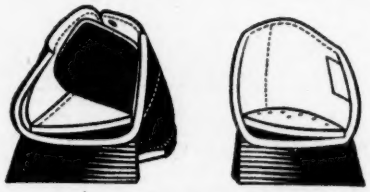

These cross-sections show the built-in wedge in position and the buttressed heel. The thickness of the wedge is ⅛" or 3/16" according to size of shoe.

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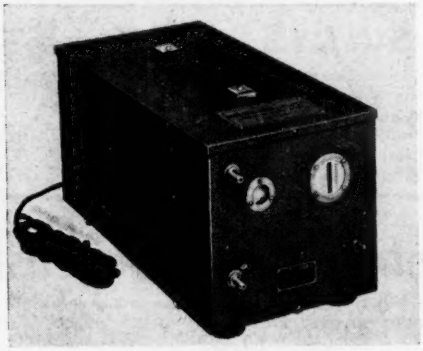

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This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

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A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

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LICENCE IN DENTAL SURGERY

Notice is hereby given that the following Examination will commence on the date stated below:—

FINAL EXAMINATION

Friday, 19th January

Candidates who have fulfilled the necessary conditions, and who desire to present themselves for examination, must give notice in writing to the Examinations Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least 21 days before the Examination, transmitting at the same time such certificates as may be required by the regulations, together with the full amount of the fee for the part or parts of the Examination for which they desire to enter.

F. M. STENT, Examinations Secretary.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

PROPHIT RESEARCH STUDENTSHIP

A candidate is to be nominated by the Council of the Royal College of Surgeons of England for a Prophit Studentship in Cancer Research.

The value of the Studentship will be £500 p.a., with an allowance not exceeding £200 for expenses, and will be for 1 year, in the first instance, but renewable annually up to 5 years at the discretion of the Special Trustees on the nomination of the Council of the College. Students may be Male or Female.

Applications, giving a statement of the proposed research, and accompanied by a recommendation from a member of the staff of the applicant's Medical School or University, should be sent to the Secretary, Royal College of Surgeons, Lincoln's Inn-fields, W.C.2, before 20th March, 1951.

KENNEDY CASSELS, Secretary.

THE UNIVERSITY OF MANCHESTER

DEPARTMENT OF CHILD HEALTH

COW AND GATE FELLOWSHIP

Applications are invited for the above Fellowship, normally of the value of £900 p.a., tenable in the University and available for research into problems associated with nutrition in infants and children.

Regulations governing the award of the Fellowship may be obtained from the Registrar, the University, Manchester, 13, to whom all applications should be sent not later than 31st January, 1951.

UNIVERSITY OF LONDON

INSTITUTE OF CHILD HEALTH

WINTER TERM 1951

A course of Lectures for Postgraduates will be given by Visiting Lecturers at The Hospital for Sick Children, Great Ormond-street, London, W.C.1, during JANUARY–MARCH, 1951, on MONDAYS at 5 P.M. on "Social and Preventive Pædiatrics."

8th January	The Influence of Environment on Disease in Childhood.	Prof. Sir JAMES SPENCE, M.D., F.R.C.P.
15th January	The Economics of Child Health	Dr. J. D. KERSHAW
22nd January	The Future of the Child Health Services	Prof. W. S. CRAIG, M.D., F.R.C.P. (Ed.)
29th January	The Prevention of Tuberculosis in Childhood	Dr. B. THOMPSON
5th February	The Delinquent Child	Dr. D. CARROLL
12th February	Variations in Infective Diseases	Dr. H. S. BANKS
19th February	The Aims in the Care of the Mentally Deficient Child	Dr. B. KIRMAN
26th February	The Prevention of Accidents in Childhood	Dr. L. COLEBROOK
5th March	Investigation of Disease in the Home	Dr. F. J. W. MILLER
12th March	The Control of Inheritable Defects	Dr. J. A. FRASER ROBERTS

The fee for the course of 10 lectures is £3 3s.

Applications for tickets of admission, accompanied by a remittance, should be sent to the Secretary, Institute of Child Health, The Hospital for Sick Children, Great Ormond-street, London, W.C.1. Early application is advised, as the number of tickets is limited.

G. H. NEWNS, Dean.

UNIVERSITY OF SHEFFIELD

DEPARTMENT OF SOCIAL AND INDUSTRIAL MEDICINE

A course in INDUSTRIAL MEDICINE (intended primarily for General Practitioners) will be held in 2 parts (each extending from Friday midday to Sunday midday):—

(i) 16TH–18TH FEBRUARY, 1951: (ii) 16TH–18TH MARCH, 1951 and will include lectures, films, case-demonstrations, and discussions on all aspects of industrial medicine, together with visits to steel works (including modern industrial medical department), rehabilitation centre, &c.

Fee (both parts) 4 guineas; single part 2 guineas. For practitioners under National Health Service Act fee will normally be paid by Ministry of Health, together with (where applicable) expenses according to approved scale.

Applications to Dean of Faculty of Medicine, University of Sheffield, as early as possible owing to limitation of numbers. Closing dates for receipt of applications for each part of course—26th January and 23rd February respectively. Applicants should state whether National Health Service practitioners or not. Should insufficient applications be received, the course will not be held.

TUBERCULOSIS EDUCATIONAL INSTITUTE

A 3-day CLINICAL COURSE will be held at the Red Cross Sanatoria of Scotland (Glen o' Dee and Tor-na-Dee) on 17TH, 18TH, and 19TH JANUARY. Fee £3 3s.

Applications for further information and enrolment should be addressed to the Secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock-square, London, W.C.1.

INSTITUTE OF ORTHOPÆDICS

COURSE IN
ANATOMY, PHYSIOLOGY AND PATHOLOGY OF JOINTS
15TH–23RD JANUARY, 1951

Monday, 15th January, Great Portland-street
10.00 A.M. Anatomical and Physiological Principles — Prof. D. V. DAVIES
11.45 A.M. Chemistry of Synovial Fluid — Dr. T. F. DIXON
12.45 P.M. Lunch
1.45 P.M. General Pathology of Joint Structures — Dr. H. A. SISSONS
4.00 P.M. Tea
4.30 P.M. Anatomy of Pectoral Girdle — Dr. J. JOSEPH
Tuesday, 16th January, Country Branch, Stanmore
10.30 A.M. Congenital Dislocation of Joints — Mr. H. J. SEDDON; Mr. D. TREVOR
12.45 P.M. Lunch
1.45 P.M. Infection of Joints — Dr. C. H. LACK; Mr. G. BLUNDELL JONES
4.00 P.M. Tea
Wednesday, 17th January, Great Portland-street
10.00 A.M. The Shoulder Capsule — Mr. V. H. ELLIS
11.15 A.M. Recurrent Dislocation of the Shoulder — Mr. V. H. ELLIS
12.45 P.M. Lunch
1.45 P.M. Clinical Demonstration — Mr. H. J. SEDDON
4.00 P.M. Tea
4.30 P.M. Anatomy and Function of the Hip — Dr. J. JOSEPH
Thursday, 18th January, Country Branch, Stanmore
10.00 A.M. Clinical Demonstration — Mr. J. A. CHOLMELEY
12.45 P.M. Lunch
1.45 P.M. Coxa Vara — Mr. K. I. NISSEN
4.00 P.M. Tea
Friday, 19th January, Country Branch, Stanmore
10.00 A.M. Tuberculosis Symposium — Mr. H. J. SEDDON
12.45 P.M. Lunch — Mr. J. A. CHOLMELEY
1.45 P.M. Tuberculosis Symposium (cont.) — Dr. F. H. STEVENSON; Dr. C. H. LACK; Dr. H. A. SISSONS
4.00 P.M. Tea
Saturday, 20th January, Great Portland-street
10.00 A.M. Anatomy of the Knee — Dr. J. JOSEPH
11.00 A.M. Neuropathic Joints — Mr. A. T. FRIPP
Monday, 22nd January, Great Portland-street
10.00 A.M. Movements of Joints — Dr. J. JOSEPH
11.15 A.M. Ankylosis — Mr. R. Y. PATON
12.45 P.M. Lunch
1.45 P.M. Osteo-arthritis — Dr. H. A. SISSONS
3.00 P.M. Mechanical Derangement of Joints — Mr. J. I. P. JAMES
4.00 P.M. Tea
5.00 P.M. Pain referred from Joints — Dr. P. H. SANDIFER
Tuesday, 23rd January, Great Portland-street
10.00 A.M. Rh.A. (Pathology) — Dr. H. A. SISSONS
11.00 A.M. Rh.A. and Gout — Dr. R. NASSIM
12.45 P.M. Lunch
1.30 P.M. Surgical Anatomy of the Spine and Weight Transmission — Dr. J. JOSEPH; Mr. J. I. P. JAMES; Mr. P. H. NEWMAN
4.00 P.M. Tea
5.00 P.M. Ankylosing Spondylitis — Prof. B. W. WINDEYER

The fee for the course, including lunch and tea, is 10 guineas.

Early application should be made to the Dean at 234, Great Portland-street, London, W.1.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Notice is hereby given that an Election of Junior Fellows to begin work on 1ST OCTOBER next will take place in June, 1951. Junior Fellowships are normally of the annual value of £600 for 3 years; but candidates, younger than those usually elected or whose promise for medical research must be judged mainly on work outside that field, may be awarded a lower rate of £500 for the first 2 years. Candidates are asked to state whether they would be unable to accept this lower initial rate. Candidates must have taken a degree in a faculty of a university in the British Empire or a medical diploma registrable in the United Kingdom. Elections to Junior Fellowships are rarely made above the age of 35 years. The Trustees are desirous of furthering research in mental diseases and, in the general allotment of Fellowships, will give some preference to a candidate proposing research on approved lines in that subject.

Applications from candidates must be received not later than the 14th April. Candidates must submit evidence that they can be given accommodation in the departments where they propose to work, which must be either in Great Britain or Ireland. Forms of application and all information may be obtained by letter only, addressed to Sir ALAN DRURY, C.B.E., F.R.S., Secretary, Beit Memorial Fellowships for Medical Research, The Lister Institute, Chelsea Bridge-road, London, S.W.1. For Overseas candidates, forms of application may be obtained from the Secretary, South African Medical Council, P.O. Box 205, Pretoria, South Africa; the Secretary, Universities Commission, Box 4061, G.P.O. Sydney, Australia; the Department of Health, Wellington, New Zealand; and the Canadian Medical Association, 184, College-street, Toronto, Canada.

THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY

UNIVERSITY OF LONDON
330–332, Gray's Inn-road, London, W.C.1

The clinical part of a COMPREHENSIVE COURSE (especially suitable for students preparing for Part II of the D.L.O Examinations) commences on 1ST JANUARY, 1951, and continues until 18th May.

The course is a full-time one and covers the whole of the clinical aspects of the specialty.

Full particulars obtainable from the Dean.

THE LONDON HOSPITAL MEDICAL COLLEGE

COURSE IN ADVANCED SURGERY

A Postgraduate Course in Surgery for final examination of the F.R.C.S. will be held at The London Hospital from 5TH MARCH, 1951 to 21ST APRIL, 1951. There will be a break of 1 week over Easter. Organised classes will be held every afternoon of the week, Saturdays and Sundays excepted. During the course postgraduate students attending the classes will be welcome at the general teaching in the outpatient departments and in the operating-theatres. The course will be strictly limited to 24 students and will be mainly devoted to clinical surgery. The fee for external candidates will be 20 guineas and for "Old Londoners" 12 guineas.

Applications should be made to the Dean, from whom further particulars can be obtained.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, UNIVERSITY OF LONDON, Keppel-street, Gower-street, W.C.1. Applications are invited for the 3 posts of JUNIOR LECTURER IN TROPICAL MEDICINE, PROTOZOOLOGY, AND HELMINTHOLOGY. Appointment is for 2 years in the first instance.

Tropical Medicine. Medical qualification and knowledge of tropical medicine essential. Teaching experience desirable. Salary £900 p.a.–£100 p.a.–£1100 p.a.

Protozoology and Helminthology. Medical, veterinary medical, or zoology (Hons.) qualification required. Experience of teaching and research desirable. Salary (medical) £900 p.a.–£100 p.a.–£1100; (non-medical) £600 p.a.–£50 p.a.–£750.

Applications addressed to the Dean, stating age, qualifications, experience, &c., should reach the School not later than 28th February, 1951.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. Applications invited for post of a SENIOR ASSISTANT in the Surgical Unit. Appointment for 1 year in the first instance from 1st February, 1951, and the salary will be on the Senior Lecturer scale of £1250–£1750 p.a., with superannuation. Applicants must hold higher surgical qualifications and be competent to take charge of general surgical beds. They should also have had experience of undergraduate teaching in surgery. The holder of the post will be required to sign an honorary contract to undertake duties in University College Hospital.

Applications, with names of 2 referees, should be sent to the Director of the Surgical Unit, University College Hospital Medical School, University-street, W.C.1, before 7th January, 1951.

Hospital Services : Senior Appointments

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Applications invited for post of ASSISTANT MORBID ANATOMIST (Senior Hospital Medical Officer). Appointment is full time and non-resident.

Full particulars, with form of application, which must be returned by 15th January, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

N.B. The closing date for applications has been altered from previous advertisement in 2nd December issue.

HOSPITAL FOR TROPICAL DISEASES (University COLLEGE HOSPITAL). Applications invited for following posts :—

CONSULTANT PHYSICIAN (4 half-days per week).

CONSULTANT SURGEON (1 half-day per week).

Experience of medicine and/or surgery in the tropics is essential. Salaries in accordance with the terms and conditions of service for medical and dental officers.

Applications (12 copies), with names of 3 persons to whom reference may be made, should be addressed to the Administrator and Secretary, Gower-street, W.C.1, by 28th February, 1951. Canvassing of Members of the Board of Governors or the Advisory Appointments Committee will disqualify.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for following Consultant position :—

Part-time GENERAL SURGEON, Mildmay Mission Hospital, Austin-street, E.2 (2 sessions a week).

The terms and conditions of service for hospital medical staff will apply.

Applications (in duplicate), stating private address, date of birth, full details of qualifications and experience, present appointment(s) (including number of sessions), grade, and salary, with names and addresses of 3 referees, should reach C. E. NICOL, Secretary, 11A, Portland-place, London, W.1, by 30th December, 1950. Canvassing disqualifies.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for following Senior Hospital Medical Officer position :—

Full-time ASSISTANT PATHOLOGIST, Area Laboratory, Bethnal Green Hospital, Cambridge Heath-road, E.2.

The terms and conditions of service for hospital medical staff will apply.

Applications (in duplicate), stating private address, date of birth, full details of qualifications and experience, present appointment(s), grade, and salary, with names and addresses of 3 referees, should reach C. E. NICOL, Secretary, 11A, Portland-place, London, W.1, by 30th December, 1950. Canvassing disqualifies.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for following Consultant position :—

ORTHOPÆDIC SURGEON, North Middlesex Hospital, Silver-street, N.18. (The successful candidate can be either full-time or part-time for the maximum number of sessions.)

The terms and conditions of service for hospital medical staff will apply.

Applications (in duplicate), stating private address, date of birth, full details of qualifications and experience, present appointment(s) (including number of sessions), grade, and salary, with names and addresses of 3 referees, should reach C. E. NICOL, Secretary, 11A, Portland-place, London, W.1, by 30th December, 1950. Canvassing disqualifies.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for appointment of PHYSICIAN-IN-CHARGE of Physical Medicine at Highlands Hospital, Winchmore-hill, N.21, for 5 half-days per week. This hospital, which has some 818 Beds, has a small number of general medical and surgical beds, a large Orthopædic Unit and all the usual Special Departments. The Hospital is in process of reorganisation as a district general hospital. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 6th January, 1951. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Medical Superintendent.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications invited for post of CONSULTANT GENERAL SURGEON to University College Hospital. Applicants must have had special training in neurosurgery. Duties will involve attendance on 3 half-days a week and the salary will be in accordance with the terms and conditions of service for medical and dental officers.

Applications (12 copies), with names of 3 persons to whom reference may be made, should be addressed to the Administrator and Secretary by 8th January, 1951. Canvassing of members of the Board of Governors or the Advisory Appointments Committee will disqualify.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications invited for post of CONSULTANT ENDOCRINOLOGIST to the Obstetric Department of University College Hospital. Duties will involve attendance on 6 half-days a week and the salary will be in accordance with the terms and conditions of service for medical and dental officers.

Applications (12 copies), with names of 3 persons to whom reference may be made, should be addressed to the Administrator and Secretary by 8th January, 1951. Canvassing of Members of the Board of Governors or of the Advisory Appointments Committee will disqualify.

Provincial

BRISTOL. UNITED BRISTOL HOSPITALS. South-WESTERN REGIONAL HOSPITAL BOARD. The United Bristol Hospitals and the South-Western Regional Hospital Board jointly invite applications from registered medical practitioners for appointment of a SENIOR CONSULTANT RADIOTHERAPIST to the Bristol, Bath, South Somerset, and North Gloucestershire areas. Appointee will act as Radiotherapist in charge of the centre at the teaching hospital, and will also be responsible for the co ordination of the associated centres in Bath and North Gloucestershire. Duties of the post will include clinical instruction of students, and the candidate appointed will probably be given the status of Lecturer in Radiotherapy in the University Department of Surgery. Appointment will be on a whole-time basis, and the terms and conditions of service recently negotiated between the Ministry and the profession will apply. Candidates should preferably hold a higher qualification in medicine or surgery as well as a Diploma in Radiology.

Applications, stating full christian names, age, and particulars of education, qualifications, and experience, and accompanied by 2 recent testimonials and names of 2 referees, should be sent to undersigned, from whom further particulars can be obtained, not later than 31st January, 1951.

STEPHEN C. MERIVALE, Secretary to the Board of Governors.
Bristol Royal Infirmary, Bristol, 2.

LEEDS REGIONAL HOSPITAL BOARD invites applications from suitably qualified persons for appointment of REGIONAL BLOOD TRANSFUSION OFFICER. Appointment is a whole-time one, of Consultant status, and will be subject to the terms and conditions of service of hospital medical and dental staffs. The provisions of National Health Service (Superannuation) Regulations, 1950, are also applicable. In accordance with declared policy the Regional Blood Transfusion Service will have close associations with the University School of Medicine and the Board will not object to the successful candidate accepting, if offered, an honorary University appointment.

Applications, stating age, qualifications, and details of experience, with names of 3 referees, should be forwarded to the Secretary, 29–31, Eastgate, Leeds, 2, by 6th January, 1951. Canvassing in any form, either directly or indirectly, will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. EAST AND WEST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE GROUPS. Locum Tenens E.N.T. CONSULTANT SURGEON for a minimum of 3 months. Salary in accordance with the national scale.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

LIVERPOOL REGIONAL HOSPITAL BOARD. The UNITED LIVERPOOL HOSPITALS. Applications are invited for a joint appointment as CONSULTANT PATHOLOGIST (whole-time) to The United Liverpool Hospitals and the Liverpool Regional Hospital Board. Candidates should possess a registerable qualification and the degree of M.D. of a University of the British Empire or the Membership of the Royal College of Physicians of London, Edinburgh or Ireland together with special experience in pathology. The appointment will include teaching and clinical duties at the Liverpool Stanley Hospital and clinical duties at Bootle General and Waterloo and District Hospitals.

Applications, stating age, qualifications, and details of present and previous appointments with dates, and accompanied by names of 3 persons to whom reference may be made, should be sent to the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1, by Saturday, 30th December, 1950. Canvassing, either directly or indirectly, will lead to disqualification.

LIVERPOOL REGIONAL HOSPITAL BOARD invite applications for the Consultant post of OPHTHALMIC SURGEON (part-time) to St. Helens Hospital (3 notional half-days) and Newton-le-Willows Cottage Hospital (1 notional half-day). Applicants should hold a higher qualification and have had wide experience in ophthalmology.

Forms of application may be obtained from, and should be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 30th December, 1950. VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of Whole-time CONSULTANT PSYCHIATRIST AND MEDICAL SUPERINTENDENT of Prestwich Hospital (2880 Beds), near Manchester. Post is at present non-resident and successful candidate will be expected to live near the Hospital. Candidates must be of high professional standing, with wide experience in psychiatry and possess higher degrees or diplomas. Salary £1700–£2750. Post superannuable and national terms and conditions of service applicable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 28th December, 1950. Canvassing will disqualify.

AMENDED ADVERTISEMENT

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST. The main unit is at Macclesfield General Hospital (West Park Branch), 35 Obstetric and 26 Gynæcological Beds, and the specialist appointed will be responsible for the organisation and supervision of the hospital maternity services and small maternity homes and units in East Cheshire and Crewe. Post may be held either on a whole-time or maximum part-time basis. Salary—whole-time £1700–£2750; part-time pro rata. National terms and conditions of service applicable and post superannuable. Candidates must be of high professional standing and possess a higher qualification. Successful candidate will be required to live within a reasonable distance of Macclesfield.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 27th December, 1950. Canvassing will disqualify.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for appointment of Part-time CONSULTANT ORTHOPÆDIC SURGEON at Hillingdon Hospital, Uxbridge, Middlesex, for 1 half-day per week. This is a general hospital of some 630 Beds, mostly acute, with the usual Special Departments. Applicants should have had wide experience and be of senior standing in the specialty of orthopædics. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 6th January, 1951. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Medical Director.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. CRAIG DUNAIN HOSPITAL, INVERNESS. Applications invited for appointment of PHYSICIAN-SUPERINTENDENT AND CONSULTANT PSYCHIATRIST at above-named Hospital. Candidates should possess a specialist qualification in psychiatry, and a higher qualification in medicine will be a recommendation. Extensive experience of psychiatry in all its branches is essential. Appointment is whole-time, and is of Consultant status. Salary in accordance with the agreed terms and conditions of service under the National Health Service. Craig Dunain Hospital contains 900 Beds and has outpatient commitments. Appointee expected to cooperate in the development and maintenance of a consulting service in psychological medicine throughout the Region.

Schedules of application and further particulars of appointment may be obtained from undersigned, with whom applications, including names of 3 referees, should be lodged by 30th December, 1950. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore Hospital, Inverness.

VELLORE, S. INDIA. CHRISTIAN MEDICAL COLLEGE. (480-Bed Hospital, large Outpatient Department, wide variety of material.) Required, RADIOLOGIST for either Diagnostic or Radiation Therapy Departments. Candidates should possess recognised diploma and have had experience.

Communicate with Dr. C. C. CHESTERMAN, O.B.E., 149, Harley-street, London, W.1.

NEW ZEALAND. WAIPAWA HOSPITAL BOARD, WAIPUKURAU, NEW ZEALAND. Applications are invited from medical practitioners, either registered or eligible for registration in New Zealand, for position of RESIDENT SURGEON. Salary £1100–£1400 p.a. New Zealand currency, according to qualifications and experience. Unfurnished house available at £110 p.a. Full particulars of the position and transport expenses, &c., are given in a schedule of information, copies of which are obtainable from the High Commissioner for New Zealand, 415, The Strand, London, W.C.2.

Applications, giving full particulars of age, qualifications, experience, and when available to commence duty, should be forwarded by air mail to reach undersigned not later than 20th January, 1951. Copies of recent testimonials should be forwarded.

J. S. KNOBLOCH, Managing Secretary.

Waipawa Hospital Board, Waipukurau, New Zealand.

NEW ZEALAND. COOK HOSPITAL BOARD, Gisborne, NEW ZEALAND. Applications, closing 16th February, 1951, are invited for the position of PATHOLOGIST. Commencing salary from £1000 to £1500 N.Z. p.a., according to qualifications and experience.

Full particulars obtainable on application to the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Applications should be forwarded direct to the Managing Secretary, Cook Hospital Board, Gisborne, New Zealand.

WAIKATO HOSPITAL BOARD. Senior Medical Staff. Applications closing on the 22nd February, 1951, are invited from qualified medical practitioners for the following full-time positions at the Waikato Hospital, Hamilton, New Zealand.

PATHOLOGIST (Senior or Junior Specialist grading).
ORTHOPÆDIC SURGEON (Junior Specialist grading).
ANÆSTHETIST (Junior Specialist or Senior Registrar grading).

Salary, according to qualifications and experience, Senior Specialist grading, minimum £1500, maximum £1750 p.a., annual increments £50, non-resident; Junior Specialist grading, minimum £1100, maximum £1400 p.a., annual increments £50, non-resident; Senior Registrar grading, non-resident minimum £881, maximum £981 p.a. annual increments £50, plus cost-of-living bonus 7s. per week, resident minimum £725, maximum £825 p.a., annual increments £50, plus cost-of-living bonus 4s. 9d. per week. Conditions of appointment obtainable from the Office of the High Commissioner for New Zealand, The Strand, London.

Applications, with copies of recent testimonials, stating age, qualifications, and experience, to be addressed to undersigned, to reach him not later than 22nd February, 1951.

A. C. BURGESS, Secretary.

Waikato Hospital Board, Hamilton, New Zealand.

Hospital Services : Junior Appointments

ALBERT DOCK ORTHOPÆDIC AND FRACTURE HOSPITAL, Alnwick-road, E.16. There is an immediate vacancy for a HOUSE SURGEON, and applications are invited from registered British medical practitioners. Salary in accordance with the terms of service for hospital medical staff in the National Health Service—i.e., £450–£500 p.a., according to experience.

Applications, stating age, qualifications, and medical school with dates, and previous experience, with names of not less than 3 recent referees, to be sent as soon as possible to—

F. A. LYON, Secretary of the
Seamen's Hospitals Management Committee.

Dreadnought Hospital, Greenwich, S.E.10.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—315 Beds.) CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post vacant 2nd January, 1951. Appointment for 6 months only and the salary, depending upon the number of posts held, £350, £400, or £450 p.a., less a residential charge at rate of £100 p.a.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 testimonials, and names of 3 referees, should reach the Assistant Secretary within 10 days of this advertisement.

CONNAUGHT HOSPITAL, Walthamstow, London, E.17. Required, HOUSE PHYSICIAN, post vacant 16th January, 1951. Salary £350, £400, or £450 p.a., according to experience, with a deduction at rate of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be sent not later than 18th December, 1950, to the Secretary, Hospital Management Committee Forest Group (No. 11), Langthorne-road, Leytonstone, E.11.

DULWICH HOSPITAL, East Dulwich-grove, S.E.22. Required, HOUSE SURGEON (with some general and special department duties). Salary £350–£450 a year, according to experience, with deduction at rate of £100 a year in respect of residence. Appointment tenable for 6 months in first instance.

Applications, stating age, qualifications, and experience, enclosing copy testimonials, to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL OF LONDON, 150, Ducane-road, London, W.12. Required, CASUALTY OFFICERS, posts vacant 8th February and 1st April, 1951. 6 months' appointment. Salary in accordance with Junior Hospital Medical Officer scale.

Applications, stating age, and giving details of experience, qualifications, and medical school, with copies of testimonials, to be forwarded to Medical Superintendent by 1st January, 1951.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. (ROYAL FREE GROUP.) Required, RESIDENT HOUSE PHYSICIAN (Male or Female), post vacant 1st January, 1951. Tenable for 6 months. Salary in accordance with National Health Service scale.

Applications on the prescribed form, with copies of 3 recent testimonials, to be returned as soon as possible.

KENNETH A. F. MILES, House Governor.

FOREST GATE HOSPITAL, London, E.7. Required, RESIDENT HOUSE OFFICER (obstetrics), second or third post. Appointment is for 6 months, commencing 1st February, 1951. Salary and terms of service as laid down by Ministry of Health. Above post is recognised for the training of candidates for D.Obst. R.C.O.G.

Written applications, together with 2 references, should be received by the Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, not later than 6th January, 1951.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications invited for appointment of CHIEF ASSISTANT in the Department for Nervous Diseases. Duties to commence 1st February, 1951. Post graded as Senior Registrar and is subject to the terms and conditions of service of the National Health Service.

Forms of application are obtainable from the Dean to whom they should be forwarded, with the names of 3 referees, to the Medical School Office, Guy's Hospital, S.E.1, not later than 28th December, 1950.

GUY'S-MAUDSLEY HOSPITAL NEUROSURGICAL UNIT. Applications invited for post of Whole-time SURGICAL REGISTRAR for the Guy's-Maudsley Neurosurgical Unit, from 1st January, 1951. The unit (at present 16 Beds) will eventually be transferred to the Maudsley Hospital, when accommodation is available. Post tenable for 1 year in the first instance.

Forms of application may be obtained from the Dean, Guy's Hospital Medical School, London Bridge, S.E.1, and should be forwarded to him, with copies of testimonials, by 22nd December, 1950.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy 15th February, 1951, for a HOUSE SURGEON. Post, which is resident and tenable for 6 months, is graded as that of a Senior House Officer in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), the salary being £670 p.a.

Further particulars and form of application, which must be returned by 8th January, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. Applications invited from registered medical practitioners (Male) for appointment of HOUSE SURGEON (first post), vacant Thursday, 1st February, 1951, including practitioners within 3 months of qualification who are liable under the National Health Service Acts. This post is recognised for purposes of F.R.C.S. (Eng.). Appointment for 6 months. Salary at rate of £150 p.a., with full residential emoluments.

Applications should reach the Secretary on or before Saturday, 30th December, 1950, together with copies of 3 recent testimonials.

KING EDWARD MEMORIAL HOSPITAL, Ealing. House OFFICER (second or third post) to Casualty and Fracture Departments, vacant 13th January, 1951. Salary, terms, and conditions as approved for hospital medical staff.

Applications, stating age, nationality, qualifications with dates, and details of experience, with copies of 2 recent testimonials, should be sent to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, by 29th December, 1950.

LONDON CHEST HOSPITAL, E.2. Hospitals for Diseases OF THE CHEST. Vacancies occur 1st February, 1951, for:—

RESIDENT HOUSE PHYSICIAN.
NON-RESIDENT HOUSE PHYSICIAN.

Appointments for 6 months, 4 in London, 2 at the Country Branch (resident), near Letchworth, and posts are graded as House Officer. Duties include work in the Outpatient Department and Refill Clinics as well as in wards.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be forwarded at once to the Secretary, London Chest Hospital, E.2.

LONDON CHEST HOSPITAL, E.2. Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st February, 1951, for RESIDENT SURGICAL OFFICER. Appointment for 6 months, with the prospect of renewal, of which 2 will be at the Country Branch, near Letchworth. Post graded as Senior House Officer or Registrar according to qualifications and experience. Previous surgical experience necessary.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be forwarded at once to the Secretary, London Chest Hospital, E.2.

MILE END HOSPITAL, Bancroft-road, London, E.1. (455 Beds.) Required, HOUSE PHYSICIAN (grade House Officer, first, second, or third post), post vacant 16th January, 1951. Tenable for 6 months. Salary £350, £400, or £450 p.a., less £100 for residential emoluments.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

MOORFIELDS WESTMINSTER AND CENTRAL EYE HOSPITAL, WESTMINSTER BRANCH, High Holborn, London, W.C.1. Applications invited from Male practitioners for post of RESIDENT SURGICAL OFFICER (Registrar grade). Appointment is from 1st March, 1951, and successful candidate, if recommended by the Medical Committee, will be eligible for appointment as Senior Resident Surgical Officer on 1st March, 1952, making a total period of service of 18 months. Appointment is resident and in accordance with the National Health Service terms and conditions of service. Experience in ophthalmology is essential. Candidates are required to call upon the Consultant Staff at the Westminster Branch.

Applications, with copies of not more than 3 testimonials, should reach undersigned by 27th January, 1951.

J. P. HEMING, Secretary.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of OTOLOGICAL REGISTRAR. Post is non-resident and is graded either as Registrar or Senior Registrar under the terms and conditions of service according to qualifications and experience. Candidates must have had experience in the specialty, and, to be graded as Senior Registrar, must hold a higher surgical qualification. Appointment will be until the 31st December, 1951, in the first instance.

Forms of application are obtainable from the Deputy Superintendent and must be submitted, with copies of testimonials, by 6th January, 1951.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, RESIDENT ANÆSTHETIST (Junior Registrar), Male or Female, for 6 months in the first instance commencing 24th January, 1951. Post recognised for the D.A. Salary £670 p.a., with other terms and conditions of service in accordance with those prescribed by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, to undersigned by 30th December, 1950.

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of CLINICAL ASSISTANT (part-time) to the Department for Diseases of the Skin at St. Mary's Hospital for 1 notional half-day per week. This appointment is graded "General Practitioner" and remuneration will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with names and addresses of 3 referees, should reach undersigned by 23rd December, 1950.

A. POWDITCH, House Governor.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post vacant 1st January, 1951. Appointment for 6 months, and the salary, depending upon the number of posts held, £350, £400, or £450 p.a., less residential charge of £100 p.a.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 testimonials, should reach the Medical Superintendent not later than 22nd December, 1950.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered Women medical practitioners for appointment of HOUSE PHYSICIAN, vacant 1st February, 1951. Appointment for 6 months. Appointee required to deputise for the Resident Medical Officer. Salary £350, £400, or £450 p.a., according to experience, less a deduction at rate of £100 p.a. for board, residence, &c.

For form of application apply to the Senior Administrative Assistant at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered Women medical practitioners for appointment of RESIDENT MEDICAL OFFICER at the Hospital's 50-Bed country branch near Crawley, Sussex; post vacant 1st February, 1951. Post is of Junior Registrar status and appointment will be for 1 year. Salary £670 p.a., less £150 p.a. for board, residence, &c.

For form of application apply to the Senior Administrative Assistant at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered medical Female practitioners for appointment of GYNÆCOLOGICAL HOUSE SURGEON, vacant 24th January, 1951. Post recognised for the M.R.C.O.G. Appointment for 6 months. Salary £400 or £450 p.a., according to experience, less £100 for full residential emoluments.

For form of application apply to the Senior Administrative Assistant at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered Female medical practitioners for appointment of OBSTETRIC HOUSE SURGEON, vacant 17th January, 1951. Post recognised for the M.R.C.O.G. Appointment for 6 months. Salary £350, £400, or £450 p.a., according to experience, less a deduction of £100 p.a. in respect of board, lodging, &c.

For form of application apply to the Senior Administrative Assistant at the Hospital.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered medical Female practitioners for appointment of HOUSE SURGEON, vacant 17th January, 1951. Appointment for 6 months. Salary £350, £400, or £450 p.a., according to experience, less £100 for full residential emoluments.

For form of application apply to the Senior Administrative Assistant at the Hospital.

WEST LONDON HOSPITAL, Hammersmith, W.6. 2 RESIDENT HOUSE PHYSICIANS (general medicine) required for 6 months from 1st February, 1951. Salary and conditions in accordance with national scale.

Applications, stating age, medical school, qualifications, and experience, with dates, should reach the Acting Secretary by 30th December, 1950.

WOOLWICH GROUP HOSPITAL MANAGEMENT COM-MITTEE. Applications invited for 2 posts of SENIOR HOUSE OFFICER (anæsthetics) based at St. Nicholas Hospital, Plumstead, and Memorial Hospital, Woolwich. Posts are resident and tenable for 1 year. Salary £670 p.a., less £150 p.a. for board and lodging.

Applications, with copies of 2 recent testimonials, to be sent to Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. CHARLES' HOSPITAL, Ladbroke-grove, London, W.10. Required, HOUSE PHYSICIAN in the Pædiatric Department of above Hospital. Appointment will be made about the middle of January for duty on 1st February, 1951, and will be in accordance with the terms and conditions of hospital medical and dental staffs.

Applications, stating age, qualifications, experience, with names and addresses of 2 referees, to reach the undersigned by 5th January, 1951. C. R. JOLLY, Esq.,
Paddington Group Hospital Management Committee.
Paddington Hospital, Harrow-road, W.9.

Provincial

ASHTON-UNDER-LYNE. LAKE HOSPITAL. (600 Beds.) Required, HOUSE PHYSICIAN for duty at above Hospital and at other hospitals in the group if required. Appointment limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification, also those holding first posts, may apply.

Applications should be addressed to—
R. W. MCVITY, Secretary, Ashton, Hyde, and Glossop Hospital Management Committee.
Astley-road, Stalybridge, Cheshire.

ASHTON-UNDER-LYNE. LAKE HOSPITAL. (600 Beds.) Required, OBSTETRIC HOUSE SURGEON at above Hospital, which has a Maternity Unit of 65 Beds and a Gynæcological Ward of 30 Beds. The Hospital is recognised for the D.Obst.R.C.O.G. It is within 6 miles of the centre of Manchester and University facilities. Considerable practical experience available for those with a sound academic training. Preference given to applicants with experience as Hospital House Officers. Appointment limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification, also those holding first posts, may apply.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded to—
R. W. MCVITY, Secretary, Ashton, Hyde and Glossop Hospital Management Committee.
Astley-road, Stalybridge, Cheshire.

ASHTON-UNDER-LYNE. LAKE HOSPITAL. (600 Beds.) Required, HOUSE SURGEON. Duties entirely surgical. Resident at above Hospital, but includes general surgical duties under same surgeon at Ashton Infirmary. Appointment limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification, also those holding first posts, may apply.

Applications should be addressed to—
R. W. MCVITY, Secretary, Ashton, Hyde and Glossop Hospital Management Committee.
Astley-road, Stalybridge, Cheshire.

AYLESBURY. ROYAL BUCKINGHAMSHIRE HOS-PITAL. (136 Beds.) HOUSE SURGEON (general surgery), second or third post, vacant 9th January, 1951. It is possible that during the 6 months the appointment may be modified to include accident and orthopædic surgery. National terms of service.

Please apply to the Secretary-Superintendent as soon as possible, with 2 testimonials.

BARNET GENERAL HOSPITAL, Barnet, Herts. Junior REGISTRAR (Casualty Officer) required. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent immediately to the Medical Director.

BEXHILL HOSPITAL, Bexhill-on-Sea. Required, House SURGEON at above Hospital and for service within the Hastings group of hospitals, post now vacant. Appointment for 6 months. Salary within scale £350–£400–£450 p.a., according to experience and posts held, less a deduction of £100 p.a. for full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications to be sent to the Administrator, Bexhill Hospital, Bexhill-on-Sea. H. A. FROGGATT, Secretary,
Hospital Management Committee Hastings Group.
11, Holmesdale-gardens, Hastings.

BIRMINGHAM. GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for following appointments:—

Birmingham Accident Hospital and Rehabilitation Centre, Birmingham, 15 (209 Beds)

HOUSE SURGEON (Male or Female). Appointment for 6 months, of which the first 2 will be with the Burns Unit (Medical Research Council) and the remainder in general traumatic service. The Hospital treats 50,000 new patients each year. Post offers practical experience in the treatment of all types of injury and includes a course of instruction on accident surgery given by the Consultant staff. Salary in accordance with the national terms and conditions of hospital medical and dental staffs.

Detailed applications, accompanied by copies of recent testimonials, to be sent to the Administrator.

Selly Oak Hospital, Birmingham, 29 (1181 Beds)

JUNIOR PÆDIATRIC REGISTRAR, shortly becoming vacant by resignation. Salary in accordance with the national terms and conditions of hospital medical and dental staffs and post will be tenable in the first instance for 6 months.

Applications, stating age, experience, qualifications, and accompanied by copies of 3 recent testimonials, should be sent at once to the Medical Superintendent.

BIRMINGHAM (SANATORIA) GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER at West Heath Sanatorium, Rednal-road, Birmingham, 31 (210 Beds). Successful applicant will reside at above Sanatorium (accommodation for single person only) and may be required to undertake duties at the Chest Clinic, Great Charles-street, Birmingham, 3. Arrangements will also be made for experience in the Thoracic Surgical Centre of the Group. Salary and conditions of service in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) and the post is subject to the National Health Service superannuation regulations.

Applications, stating age, qualifications, training and experience, with copies of 3 recent testimonials, should be addressed to the Secretary, Birmingham (Sanatoria) Group Hospital Management Committee, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL, near BIRMINGHAM. GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR SURGICAL REGISTRAR. Salary in accordance with the national terms and conditions of hospital medical and dental staffs.

Detailed applications, accompanied by copies of recent testimonials, to be sent to the Medical Superintendent.

BIRMINGHAM. THE CHILDREN'S HOSPITAL. The UNITED BIRMINGHAM HOSPITALS. HOUSE OFFICER (surgical) required for 6 months, to commence duty 1st January, 1951. Duties mainly general surgery but the officer will have, in addition, the opportunity of undertaking a certain amount of special surgery. Salary in accordance with terms and conditions of service for hospital medical staff, less £100 p.a. for board-residence.

Forms of application may be obtained from undersigned and should be returned as soon as possible.

N. R. WINWOOD, House Governor.

Ladywood-road, Birmingham, 16.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL. HOUSE SURGEON required, duties commence 1st March, 1951. Appointment for 6 months. Salary £400 or £450 p.a., according to experience.

Application forms can be obtained from undersigned, and should be returned not later than 28th December, 1950.

BERNARD SYLVESTER, House Governor.
The United Birmingham Hospitals,
Birmingham and Midland Hospitals for Women,
Showell Green-lane, Sparkhill, Birmingham, 11.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. Required, MEDICAL REGISTRAR (non-resident), Registrar or Senior Registrar grade, for duty in the Medical Professorial Unit. Candidates must be registered medical practitioners, have held a resident appointment in a teaching hospital, and should possess the M.R.C.P. (London). Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Forms of application may be obtained from, and should be returned not later than 1st January to, the Secretary, United Birmingham Hospitals, The Queen Elizabeth Hospital, Birmingham, 15.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (300 occupied Beds.) Required, RESIDENT HOUSE OFFICER (casualty), first, second, or third post held. Salary £350–£450 p.a., according to experience, less £100 p.a. in respect of residential emoluments. Appointment, which is due to commence 5th January, 1951, is for 6 months and is subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating nationality, age, qualifications, and experience, with copies of recent testimonials, or the names of referees, should be sent, as soon as possible, to the Administrative Officer, Haymeads Hospital, Bishop's Stortford, Herts.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (300 occupied Beds.) Required, RESIDENT HOUSE OFFICER (surgical), first or second post held. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence 1st January, 1951, and is subject to terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or names of referees, should be sent, as soon as possible, to the Administrative Officer.

BISHOP'S STORTFORD HOSPITALS. Bishop's Stortford AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTFORDSHIRE. (67 Beds—medical, surgical, and maternity.) RESIDENT HOUSE OFFICER (Male), first or second post. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence immediately, and is subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, nationality, qualifications, and experience, with copies of testimonials and/or names of referees, to the Administrative Officer, Haymeads Hospital, Bishop's Stortford, as soon as possible.

BRADFORD ROYAL INFIRMARY. House Surgeon required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon (Thoracic Unit) required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. Orthopædic and CASUALTY HOUSE SURGEON required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, along with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. House PHYSICIAN required. Salary £350–£450 p.a., according to experience, less £100 p.a. in respect of emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BRADFORD. ST. LUKE'S HOSPITAL. House Surgeon required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for following appointments:—

Townleys Hospital (521 Beds, including 109 for obstetrics and 63, plus premature nursery, for pædiatrics)

RESIDENT JUNIOR REGISTRAR for the Department of Pædiatrics, post vacant 1st January and tenable for 12 months. Previous experience in pædiatrics essential and possession of the Diploma in Child Health would be an advantage. Duties will include the supervision of newborn and premature infants in addition to the care of sick children. Salary £670 p.a.

RESIDENT HOUSE OFFICER (second or third appointment) for the Department of Obstetrics, post vacant 17th January and tenable for 6 months. The Hospital is recognised for the D.Obst.R.C.O.G. examination. Salary £400 or £450 p.a., according to experience.

The Royal Infirmary, Bolton (235 Beds)

(*a*) RESIDENT HOUSE SURGEON, principally for duties in Casualty, Orthopædic, and Ophthalmic Departments, post vacant immediately.

(*b*) RESIDENT HOUSE SURGEONS (2) for general surgical duties, posts vacant 1st January and 10th January, 1951.

Appointments for 6 months. Salary £350, £400 or £450 p.a., according to experience.

Conditions of service for all appointments in accordance with the terms issued by the Ministry of Health. Appropriate charges will be made for residence.

Applications, stating age, nationality, qualifications, and experience, with names of 2 persons to whom reference may be made, to be sent to undersigned at the Royal Infirmary, Bolton, as soon as possible. H. P. TRAVIS, Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (488 Beds.) Required, CASUALTY OFFICER, post vacant 15th December. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of above Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post vacant 10th January, 1951. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of the above Hospital.

BOWDON, CHESHIRE. MANCHESTER THROAT AND CHEST HOSPITAL. (53 Beds.) Required, JUNIOR E.N.T. REGISTRAR (non-resident) to commence as soon as possible. 12 months' appointment. This appointment is in a busy hospital staffed by Manchester consultants and offers excellent opportunities of practical experience to suitably qualified candidates. Salary £670 p.a. Conditions as laid down in accordance with the terms of service issued by the Ministry of Health.

Applications, stating age, qualifications, &c., should be forwarded to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

BOWDON, CHESHIRE. MANCHESTER THROAT AND CHEST HOSPITAL. (53 Beds.) Required, HOUSE OFFICER to commence duties as soon as possible. 6 months' appointment. This is a busy hospital staffed by Manchester Consultants. Facilities for postgraduate study will be afforded and there is also opportunity for much practical experience. Salary and conditions as laid down in accordance with the terms of service issued by the Ministry of Health.

Applications, stating age, qualifications, &c., should be forwarded to the Secretary, North and Mid-Cheshire Hospital, Management Committee, The Hospital, Sinderland-road, Altrincham.

BROMSGROVE. BARNSLEY HALL HOSPITAL. Mid-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR. Salary £670 p.a. in accordance with the terms and conditions of service issued by the Ministry of Health. Furnished quarters available at a charge to be fixed.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent at above Hospital.

BROMSGROVE. HILL TOP HOSPITAL. (76 Beds.) Required, HOUSE SURGEON (resident) at above Hospital shortly to be used as a Regional Thoracic Centre, post vacant now. Salary, terms, and conditions of service in accordance with those laid down by the Ministry of Health for hospital medical staff.

Applications, stating age, qualifications, and experience, and quoting names of 3 referees, should be sent to—

C. M. SMITH, Secretary,
Mid-Worcestershire Hospital Management Committee.
Birmingham-road, Bromsgrove.

BROMSGROVE. ALL SAINTS' HOSPITAL. (468 Beds.) MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required :—
HOUSE SURGEON (resident),
HOUSE PHYSICIAN (resident),
at above Hospital. Posts vacant now. Salaries, terms, and conditions approved for hospital medical staff.
Applications, with copies of recent testimonials, to the Physician-Superintendent.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Required, HOUSE OFFICER (first, second, or third post). Tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Salary first post £400, second post £450, and third post £500, less a deduction of £100 for board and lodging.
Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Required, ORTHOPÆDIC HOUSE OFFICER, first, second, or third post, at above Hospital. Salary first post £400, second post £450, and third post £500, less a deduction of £100 for board and lodging.
Applications, with copies of 3 recent testimonials, should be sent as soon as possible to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

BUCKNALL ISOLATION HOSPITAL. (202 Beds.) Required, HOUSE OFFICER (medical), second or subsequent post. Salary in accordance with national scale.
Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to undersigned at Princes-road, Stoke-on-Trent.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

BURTON-ON-TRENT. GENERAL INFIRMARY. (Acute General Hospital—235 Beds.) Required, HOUSE PHYSICIAN (resident). Salary range £350–£450 in accordance with Ministry of Health terms.
Applications, with all details and copies of testimonials, to be forwarded immediately to—
J. E. SMITH, Secretary,
Burton-on-Trent Hospital Management Committee.

BURY GENERAL HOSPITAL, Bury, Lancs. (An Acute General Hospital of 178 Beds mainly surgical with beds for orthopædic and other specialties.) Required, JUNIOR ANÆSTHETIC REGISTRAR (resident or non-resident). Post vacant 31st December, and is recognised for the D.A. Tenure of appointment 1 year. Salary, &c., in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales), that is, £670 p.a., non-resident (with a deduction of £100 where the post is resident).
Applications, stating age, nationality, qualifications, and experience, with copies of 2 testimonials, should be forwarded immediately to undersigned, from whom further particulars can be obtained. H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.

BURY GENERAL HOSPITAL. (164 Beds.) Required, HOUSE SURGEON. Post recognised for the F.R.C.S. Hospital is mainly surgical and experience can be gained in orthopædic and E.N.T. work. Salary and conditions of service in accordance with national scale.
Applications, giving full details of qualifications and experience, should be made immediately to—
H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

BURY ST. EDMUND'S. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) WEST SUFFOLK HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (first or second post) for Pædiatric and General Medical Department, post vacant early January, 1951. Appointment initially for 6 months. Salary £350 or £400 p.a., less £100 emoluments, in accordance with National Health Service conditions of service, &c.
Applications, stating age, nationality, qualifications, and experience, with no more than 3 recent testimonials, to the House Governor.

BURY ST. EDMUND'S. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) WEST SUFFOLK HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (first or second post) for General Surgical Department, post vacant early January, 1951. Appointment initially for 6 months. Salary £350 or £400 p.a., less £100 emoluments, in accordance with National Health Service conditions of service, &c.
Applications, stating age, nationality, qualifications, and experience, with no more than 3 recent testimonials, to the House Governor.

BURY ST. EDMUND'S. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) WEST SUFFOLK HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (first or second post) for Ophthalmic and E.N.T. Department, post vacant early January, 1951. Appointment initially for 6 months. Salary £350 or £400 p.a., less £100 emoluments, in accordance with National Health Service conditions of service.
Applications, stating age, nationality, qualifications, and experience, with no more than 3 recent testimonials, to the House Governor.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, E.N.T. AND EYE HOUSE SURGEON post now vacant at above Hospital. Post is recognised for the D.L.O. and D.O.M.S. examinations. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 for residential emoluments.
Applications, giving full particulars of qualifications and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON to the General Surgical and Urological Departments, post vacant in the middle of January, 1951. Appointment limited to 6 months. Post is recognised for the F.R.C.S. Diploma, and the salary will be £400 or £450 p.a., according to the number of posts held, with a deduction of £100 p.a. for residential emoluments.
Applications, stating age, qualifications with dates, and details of previous experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, ORTHOPÆDIC HOUSE SURGEON. Appointment vacant early in January, 1951, and limited to 6 months. Previous experience in orthopædic surgery an advantage. Post is recognised for the F.R.C.S. Diploma. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 p.a. for residential emoluments.
Applications, giving full particulars of qualifications with dates, and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, SENIOR HOUSE SURGEON (Male), post vacant early in January, 1951. Appointment for 6 months. Appointment is recognised for the F.R.C.S. Diploma, and salary will be £400 or £450 p.a., according to the number of posts held, with a deduction of £100 p.a. for residential emoluments.
Applications, stating age, qualifications with dates, and details of previous experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. ST. AUGUSTINE'S HOSPITAL, CHARTHAM, near CANTERBURY. Applications invited by the Management Committee of the above Hospital for Mental and Nervous Disorders from registered practitioners (Male or Female) for post of RESIDENT SENIOR HOUSE OFFICER for tenure of 1 year. Salary in accordance with terms and conditions of service for hospital medical staff—i.e., £670 p.a. Unmarried accommodation is available in the Hospital, for which a charge of £150 will be made.
Apply, stating nationality, age, sex, qualifications, and experience, with names of 3 referees, to the Medical Superintendent, within 14 days of this advertisement.

CAMBRIDGE. UNITED CAMBRIDGE HOSPITALS. Required, HOUSE SURGEON (Male or Female) at Addenbrooke's Hospital, post vacant 1st February, 1951. Salary (resident) £350 a year.
Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, should be sent on or before 30th December, 1950, to—
J. A. BEARDSALL, Secretary.

CAMBRIDGE. PAPWORTH SANATORIUM. Papworth HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN. Applicants must have held resident surgical and medical posts in a general hospital. Appointment for 6 months and salary is at rate of £400–£450 p.a., according to experience, less £100 for residential emoluments.
Applications should be sent to the Secretary, Papworth Group Hospital Management Committee, Papworth Hall, Cambridge, accompanied by 3 recent testimonials.

CARDIFF. GLAN ELY HOSPITAL. (236 Beds, pulmonary and non-pulmonary tuberculosis.) Required, RESIDENT MEDICAL OFFICER at above, which is a Hospital for the treatment of all forms of tuberculosis. Experience afforded in thoracic surgery and tuberculosis of bones and joints, genito-urinary tract and skin. Salary £400 p.a., less a deduction of £100 p.a. for emoluments, or a cottage is available for a married man. R practitioners may apply.
Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cowbridge-road, Cardiff.

CHESTER. COUNTY MENTAL HOSPITAL. Psychiatric SENIOR HOUSE OFFICER required. Salary £670 p.a. Accommodation available for single Man and for which a charge will be made. All forms of modern treatment available including Insulin Unit. There are psychiatric outpatient clinics at 3 General Hospitals, occupational therapy units and voluntary treatment wards. Facilities given to study for higher qualifications.
Apply Medical Superintendent.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) Required, JUNIOR REGISTRAR or HOUSE SURGEON required immediately for Accident and Orthopædic Departments. Salary, less appropriate deduction for resident post, and conditions of service as determined by Ministry of Health.
Further particulars obtainable from undersigned, to whom applications should be submitted forthwith.
M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.
Royal Hospital, Chesterfield.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) Applications invited from registered medical practitioners for following appointments :—
JUNIOR REGISTRAR (Resident Surgical Officer) required 1st February, 1951.
HOUSE OFFICER for Casualty Department. This post carries special additional allowance of £50 p.a.
Salaries, less appropriate deductions where posts are resident, and conditions of service as determined by Ministry of Health.
Further particulars obtainable from undersigned, to whom applications should be submitted forthwith.
M. H. BOONE, Secretary,
Chesterfield Hospital Management Committee.
Royal Hospital, Chesterfield.

CHELMSFORD AND ESSEX HOSPITAL. 2 House SURGEONS required, 1 to commence beginning January and 1 beginning of February. Salary according to National Health Service scale.

Apply, Secretary, Hospital Management Committee, Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL, London-road, CHELMSFORD. JUNIOR REGISTRAR (Casualty Officer) required at above Hospital. To commence immediately. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX AND ST. JOHN'S HOSPITALS. HOUSE SURGEON required to work at above Hospitals. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

CHELTENHAM GENERAL EYE AND CHILDREN'S HOSPITAL. (220 Beds.) Applications invited for post of HOUSE SURGEON, vacant 1st January. Salary £400–£450 p.a., according to experience, less £100 p.a. in respect of emoluments. Appointment will be resident and tenable for 6 months in the first instance.

Applications, with 2 recent testimonials, to be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHELTENHAM. SUNNYSIDE MATERNITY HOSPITAL. Required, RESIDENT OBSTETRIC OFFICER, post vacant at the end of December. The Hospital, which is recognised for the purpose of training for the D.Obst.R.C.O.G., has 63 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. Appointment for 6 months and the salary will be £400 or £450 p.a., less £100 in respect of residential emoluments.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

COVENTRY GROUP NO. 20 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for under-mentioned post. National scale of salary :—

Coventry and Warwickshire Hospital (346 Beds)

HOUSE SURGEON, General Surgical Department, post now vacant.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

DEVONPORT. ALEXANDRA MATERNITY HOME. (50 Beds.) PLYMOUTH, SOUTH DEVON, AND EAST CORNWALL GENERAL HOSPITAL GROUP. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. Required, HOUSE SURGEON (second or third post), vacant 17th February, 1951. Appointment for 6 months and terminable by 1 month's notice on either side. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, should be sent by 3rd January, 1951, to ARTHUR R. CASH, Secretary.

Head Office, Greenbank-road, Plymouth.

DORCHESTER. DORSET COUNTY HOSPITAL. (125 Beds.) HOUSE SURGEON (Male or Female) required, post vacant mid-December, 1950. Post tenable for 6 months. Appropriate Ministry of Health salary scale according to experience, with a deduction at rate of £100 p.a. for residence.

Applications, giving age, experience, qualifications, and nationality, with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

DUNDEE DISTRICT MENTAL HOSPITAL, Westgreen, DUNDEE. Required, RESIDENT HOUSE OFFICER. Salary within scale £350–£450 p.a., according to previous posts held. A deduction of £100 p.a. will be made for residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, should be forwarded to the Medical Superintendent.

DUNDEE DISTRICT MENTAL HOSPITAL, Westgreen, DUNDEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary £700 p.a., less a deduction for residential emoluments, while the appointment will be held for not more than 1 year in the first instance.

Applications, containing copies of recent testimonials, should be sent to the Physician-Superintendent.

DONCASTER ROYAL INFIRMARY. (330 Beds—recognised under the Regulations for the Examinations of the R.C.S.) Required, HOUSE SURGEON (Male or Female). Salary £350, £400, or £450 p.a., according to experience. A deduction at rate of £100 p.a. made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded immediately to—

ARTHUR JONES, Secretary,
Doncaster Hospital Management Committee.
c/o Doncaster Royal Infirmary.

DEWSBURY, BATLEY AND MIRFIELD HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER in the specialty of pædiatrics. Post is resident and subject to 1 month's notice on either side. Duties to be carried out at hospitals in the Group. Salary according to national scale.

Applications, stating age, qualifications, and nationality, with names of 2 referees, should be forwarded to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DEWSBURY. THE GENERAL HOSPITAL. House OFFICER (surgical), third or subsequent appointment, to assist Consultant Ophthalmic Surgeon. Recognition of the Hospital as a training centre for the Diploma in Ophthalmology is under consideration. Terms and conditions of service as laid down for hospital medical and dental staffs (England and Wales).

Applications, giving full particulars and names of 3 referees, to undersigned at 20, Oxford-road, Dewsbury.

G. W. BATCHELOR, Secretary,
Hospital Management Committee No. 11,
Dewsbury, Batley and Mirfield Group.

DARLINGTON MEMORIAL HOSPITAL. Required, RESIDENT ANÆSTHETIST (Male or Female). National Health Service superannuation regulations in force. Previous experience in anæsthesia an advantage, but not essential (trainee post).

Apply, with references and full details, forthwith to—

G. W. BECKWITH, Secretary,
Darlington District Hospital Management Committee.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) Required, HOUSE SURGEON (resident). Salary in accordance with national scale.

Apply, giving age and references, forthwith to—

G. W. BECKWITH, Secretary.

DARLINGTON MEMORIAL HOSPITAL. Required, CASUALTY OFFICER (Male or Female). Salary in accordance with national scale.

Apply, with references, stating age and experience, to—

G. W. BECKWITH, Secretary.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry at St. Audry's Mental Hospital, Melton, near Woodbridge, Suffolk (1075 Beds) and associated outpatient clinics in general hospitals in the area. Quarters are available for a single Man, for which a charge will be made. Salary and terms and conditions of service of hospital medical and dental staffs will apply. Appointment for 1 year, renewable for second year.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should be sent to undersigned not later than 23rd December, 1950. Candidates are invited to visit the Hospital by direct arrangement with Dr. I. Davies, Medical Superintendent.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ORTHOPÆDIC REGISTRAR at the Peterborough and District Memorial Hospital (175 Beds). Preference given to candidates with a higher surgical qualification. Salary and terms and conditions of service of hospital medical and dental staffs will apply. Appointment for 1 year, renewable for second year.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should be sent to undersigned not later than 23rd December, 1950. Candidates are invited to visit the hospital by direct arrangement with Mr. Noel Smith, the Orthopædic Surgeon.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EDGWARE GENERAL HOSPITAL. North West Metropolitan REGIONAL HOSPITAL BOARD. Applications invited for non-resident post of CASUALTY SURGICAL OFFICER in a large general Hospital (713 Beds), post vacant 1st January, 1951. Salary £700 p.a.–£50 p.a.–£1000 p.a., the commencing salary being subject to experience. Appointment in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) and is for 1 year in the first instance. Applicants should be ineligible for H.M. Forces.

Apply, giving full particulars of age and experience, with names of 2 referees, to the Group Secretary, Edgware General Hospital, Edgware, Middlesex, not later than 23rd December, 1950. Canvassing disqualifies, but applicants may visit the Hospital if they so desire.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. RESIDENT HOUSE PATHOLOGIST required, post vacant 1st January, 1951. 6 months' appointment. Salary £350–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, and experience, and enclosing copies of up to 3 recent testimonials, to the Medical Director of the Hospital by 23rd December, 1950. Candidates selected for interview will be notified by 30th December, 1950.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. (300 Beds—10 Resident Medical Staff employed.) EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), post vacant 18th January, 1951. Appointment for 6 months. Salary £350, £400, and £450 p.a., less deduction of £100 p.a. for full residential emoluments. National Health Service terms and conditions. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, with copies of 2 recent testimonials, should be forwarded to the Senior Administrative Officer, on or before 30th December, 1950.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. (300 Beds—10 Resident Medical Staff employed.) EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIANS (Male or Female), posts vacant 18th and 24th January, 1951. Appointments are for 6 months. Salary £350, £400, or £450 p.a., less deduction of £100 p.a. for full residential emoluments. National Health Service terms and conditions. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, with copies of 2 recent testimonials, should be forwarded to the Senior Administrative Officer, on or before 30th December, 1950.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL. (120 Beds.) NORWICH, LOWESTOFT AND GREAT YARMOUTH (GROUP 6) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications to Secretary, Great Yarmouth and Gorleston General Hospital, Dene Side, Great Yarmouth.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (medical), post vacant 6th January, 1951. Salary in accordance with terms and conditions of service issued by the Ministry of Health.

Applications, with names of 2 referees, to be sent to the Administrative Officer, Grimsby General Hospital.

GRIMSBY, LINCS. SCARTHO ROAD INFIRMARY. (218 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Applications invited for following posts now vacant :—

RESIDENT HOUSE OFFICER (medical).

RESIDENT HOUSE OFFICER (surgical).

Salary in accordance with the National Health Service terms and conditions of service.

Applications to Administrative Officers, Scartho Road Infirmary, Grimsby.

GRIMSBY. SPRINGFIELD HOSPITAL (Chest Diseases). (210 Beds—Infectious Diseases.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (medical). An ex-tuberculous patient would be considered. Salary in accordance with terms and conditions of service of hospital medical and dental staffs £350–£450 p.a. All forms of tuberculosis are treated in this Hospital and modern methods of therapy are available, including major thoracic surgery. It is a recognised hospital for streptomycin treatment.

Applications, with names of 3 referees, should be submitted to the Administrative Officer, Springfield Hospital, Scartho, Grimsby.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (229 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required. Post tenable for 6 months. Salary £350–£450, according to experience, with deduction of £100 p.a. for emoluments.

Applications, with full particulars and copies of 3 testimonials, should be sent to the Secretary-Superintendent as soon as possible.

GUILDFORD, SURREY. ST. LUKE'S HOSPITAL. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for appointment of OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR (resident or non-resident) at above Hospital. Preference given to candidates holding higher qualifications. Appointment in accordance with the agreed terms and conditions of service of hospital medical and dental staffs subject to the provisions of the National Health Service superannuation regulations.

Application forms may be obtained from the Secretary, Guildford Group Hospital Management Committee, Group Office, St. Luke's Hospital, Guildford (stamped addressed envelope), and should be returned to the Secretary, duly completed, to arrive not later than first post, 29th December, 1950. Canvassing will disqualify a candidate from consideration, but candidates are not precluded from visiting the Hospital.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Required, HOUSE SURGEON (Male or Female). Salary according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be addressed to the Secretary at the Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Required, HOUSE SURGEON (Male) to the Ophthalmic and E.N.T. Departments at this busy acute General Hospital. Post recognised for the D.O. and is vacant early January.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be forwarded to the Secretary.

HALIFAX. ST. JOHN'S HOSPITAL. Applications invited for appointment of a Female HOUSE PHYSICIAN at above Hospital which at present accommodates 400 aged sick and chronic cases. This Hospital is being developed and is already provided with consultant medical and ancillary services. The House Physician will be responsible to the Medical Registrar —whose main duties are at this Hospital, but who also undertakes duty at the Royal Halifax Infirmary, and to the Visiting Consultants.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 testimonials, to be forwarded to—

R. W. RANSON, Secretary,
Halifax Area Hospitals Management Committee.
Royal Halifax Infirmary, Halifax.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON at the Marie Curie Hospital. Salary in accordance with Ministry of Health terms and conditions of service of hospital medical and dental staffs.

Applications, with testimonials, to be sent to the Medical Director, The Marie Curie Hospital, 66, Fitzjohn's-avenue, N.W.3, immediately.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. ORTHOPÆDIC HOUSE SURGEON required, vacant now. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required, vacant now. Recognised for F.R.C.S. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice on either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required in the E.N.T. Department at the Hull Royal Infirmary and the Victoria Hospital for Sick Children. Recognised for D.L.O. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (160 Beds.) Applications invited for following appointments :—

RESIDENT SURGICAL OFFICER (Male). 6 months appointment. Salary £450 p.a., less £100 p.a. for residential emoluments.

HOUSE SURGEON (Male or Female). 6 months' appointment. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for residential emoluments.

Applications in writing, stating age, qualifications with dates, and nationality, with copies of 3 testimonials, to be sent immediately, addressed to the undersigned at Pembroke County War Memorial Hospital, Haverfordwest.

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. HOUSE SURGEON (resident), Male, required for obstetric duties at above Hospital. Previous obstetric experience desirable but not essential. Post tenable for 6 months vacant towards end of December. Salary according to scale £350–£450 p.a., less £100 p.a. for residential emoluments. Whole-time duties under Medical Director.

Applications, not later than 20th December, stating age, nationality, qualifications, and experience, and enclosing copies of 1–3 recent testimonials, to Medical Director.

HORNCHURCH, ESSEX. ST. GEORGE'S HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER. This Hospital at present accommodates chronic sick patients and offers excellent geriatric experience. The present beddage is for 268 chronic sick patients which will later be increased. Salary, &c., in accordance with nationally agreed terms and conditions of service for hospital medical and dental staffs.

Applications, stating (in order) age, nationality, qualifications with dates, present and previous appointments, and details of experience, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, with copies of 2 most recent testimonials or names of 2 referees.

IPSWICH. BOROUGH GENERAL HOSPITAL. (300 Beds.) RESIDENT MEDICAL OFFICER required. Salary £775 £890 p.a. Preference given to candidates with a higher medical qualification. Terms and conditions of service for hospital medical and dental staffs will apply. Appointment for 1 year, renewable for second year.

Applications (6 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should be sent to undersigned not later than 8th January, 1951. Candidates are invited to visit the Hospital by direct arrangement with the Hospital Management Committee Secretary at the East Suffolk and Ipswich Hospital, Ipswich.

K. V. F. MORTON, Secretary,
East Anglian Regional Hospital Board.
117, Chesterton-road, Cambridge.

ISLE OF MAN. NOBLE'S ISLE OF MAN HOSPITAL. Applications invited for post of SENIOR HOUSE SURGEON at above Hospital, which is an acute general hospital with a busy surgical practice and specialist visiting staff. Post will be remunerated at the level appropriate to that of a Junior Registrar under the terms and conditions of service of hospital medical and dental staffs (England and Wales), and would be suitable for a man reading for a higher surgical qualification. Previous hospital experience is, of cour e, essential.

Applications, giving all relevant particulars, with copies of 2 recent testimonials or names and addresses of 2 referees, should be forwarded to the Secretary, Noble's Isle of Man Hospital, Douglas.

KEIGHLEY, YORKSHIRE. ST. JOHN'S HOSPITAL. (194 Beds, Chronic Sick—29 Beds, Maternity Unit.) Applications invited from medical practitioners (who have been qualified for not less than 2 years) for appointment of JUNIOR HOSPITAL MEDICAL OFFICER. Successful applicant will be required to reside at St. John's Hospital, at which accommodation is available for a married officer but will be required to spend a proportion of his time at Keighley Victoria Hospital, which is a 146 Bedded hospital for the acute sick. Both hospitals have a staff of visiting consultants. Salary according to scale £700–£50–£1000 p.a., subject to deductions for board, lodging, &c. Appointment initially for 1 year, subject to annual renewal up to a maximum of 3 years.

Applications, stating age, experience, qualifications, and nationality, and names of 3 referees, to be forwarded immediately to— J. YOUNG, Secretary, Bingley, Keighley,
Skipton and Settle Hospital Management Committee.
St. John's Hospital, Keighley, Yorkshire.

KETTERING AND DISTRICT GENERAL HOSPITAL. (129 Beds, plus 40-Bed Annexe.) Required, SENIOR HOUSE SURGEON. 4 residents on staff. Salary £350–£450, according to experience, less £100 board-residence. Appointment for 6 months in the first instance, and post is now vacant.

Applications, with copies of 1–3 testimonials, to be sent as soon as possible to—

G. H. FENNELL, Assistant Secretary,
Kettering and District Hospital Management Committee.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, nationality, with 3 recent testimonials, to the Secretary, Lowestoft and North Suffolk Hospital, Lowestoft.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Required, HOUSE SURGEON AND CASUALTY OFFICER to work with a Specialist Orthopædic Unit. Post is full-time, vacant, and normally tenable for 6 months. The terms and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs. Salary scale £350–£450 p.a., according to experience.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Required, RESIDENT HOUSE OFFICER (anæsthetics) to be attached to a Specialist Anæsthetic Unit, vacant now. Post is full-time and is normally tenable for 6 months. The terms and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs. Salary scale £350–£450 p.a., according to experience.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary of the Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Required, 2 RESIDENT HOUSE SURGEONS to be attached to surgical specialist teams, vacant now. Posts are full-time and are normally tenable for 6 months. The terms and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs. Salary scale £350–£450 p.a., according to experience.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary of the Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

LANCHESTER, CO. DURHAM. MAIDEN LAW HOSPITAL. Required, E.N.T. HOUSE OFFICER (resident) for duties in a recently created 24-Bed E.N.T. Unit. Appointment in accordance with national terms and conditions, less £100 p.a. deduction for residential emoluments.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be sent as soon as possible to—

A. LAWTHER, F.C.C.S., F.H.A., Secretary,
North West Durham Hospital Management Committee.
Shotley Bridge General Hospital, Shotley Bridge, co. Durham.

LANCHESTER, CO. DURHAM. MAIDEN LAW HOSPITAL. Required, SENIOR HOUSE OFFICER at above Hospital. Appointment in accordance with national terms and conditions and National Health Service superannuation regulations. £150 p.a. deduction for residential emoluments. Successful applicant's main duties will be in the 24-Bed E.N.T. Unit at Maiden Law Hospital and outpatient clinics at other hospitals within the group, but will be required to do occasional relief duty in the Isolation Unit.

Applications, stating age, qualifications, and previous experience, with names of 3 referees, should be sent as soon as possible to— A. LAWTHER, F.C.C.S., F.H.A., Secretary,
North West Durham Hospital Management Committee.
Shotley Bridge Hospital, Shotley Bridge, co. Durham.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Required, RESIDENT HOUSE SURGEON (second or third post), E.N.T. and Ophthalmic Departments, post now vacant. Tenable for 6 months. Salary according to number of previous posts held, and conditions of service in accordance with terms and conditions of service of hospital medical staff.

Applications to be sent as soon as possible to—
Miss V. WELLS, Assistant Secretary.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Applications invited from registered medical practitioners, Male and Female, for appointment as RESIDENT RADIOTHERAPY OFFICER to the National Radiotherapy Centre at the General Infirmary, Leeds. Appointment for 12 months and may be renewed for a further period of 12 months. Post graded as a House Officer, with salary according to experience, in accordance with National Health Service terms and conditions of service, but a candidate with Part 1 of the Diploma in Radiotherapy may be graded as a Junior Hospital Medical Officer. In all cases a deduction at rate of £100–£130 p.a. will be made in respect of board and lodging and other services provided, and the appointment may be terminated by 1 month's notice on either side. Appointment is one which should appeal to medical practitioners wishing to specialise in radiotherapy, and will include full opportunities for acquiring the necessary academic knowledge and clinical experience for the Diploma in Radiotherapy.

Applications, with names of 1–3 referees, to be sent to undersigned within 10 days of appearance of this advertisement.
S. CLAYTON FRYERS, Secretary to the Board.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Required, HOUSE PHYSICIAN at above Hospital, post vacant 1st January, 1951. Salary £350–£450 p.a., according to experience, less £100 p.a. residential emoluments.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to— R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LIVERPOOL, 14. BROADGREEN HOSPITAL. Required, SENIOR HOUSE OFFICER (non-resident), for both inpatient and outpatient duties with a Medical Unit at the Hospital. Salary in accordance with the Ministry's scale—i.e., £670 p.a.

Applications, on forms obtainable from undersigned, to be returned not later than 6th January, 1951.
H. BLYTHE, Secretary.
Broadgreen Hospital, Edge Lane-drive, Liverpool, 14.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications invited from registered medical practitioners for appointment as a RESIDENT HOUSE SURGEON at the Royal Liverpool Children's Hospital (Heswall Branch) for the period to 31st March, 1951, with the possibility of appointment for the 6 months from 1st April, 1951. Salary £350, £400, or £450 p.a., according to experience, less a deduction at rate of £100 p.a. for board and residence, in accordance with the agreed terms and conditions of service (House Officers). Appointment subject to National Health Service superannuation regulations.

Applications, stating age, qualifications, and details of present and previous appointments with dates, and accompanied by names of 3 persons to whom reference may be made, should be sent at once to— A. V. J. HINDS, Secretary,
The United Liverpool Hospitals.
80, Rodney-street, Liverpool, 1, 5th December, 1950.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications invited from registered medical practitioners for an appointment as CASUALTY OFFICER at the Royal Southern Hospital for the period ending 31st March, 1951. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and residence, in accordance with the agreed terms and conditions of service (House Officers). Appointment subject to National Health Service superannuation regulations.

Applications, with full details, should be sent at once to—
A. V. J. HINDS, Secretary,
The United Liverpool Hospitals.
80, Rodney-street, Liverpool, 1, 5th December, 1950.

LYMINGTON AND DISTRICT HOSPITAL, Lymington, HANTS. HOUSE PHYSICIAN AND HOUSE SURGEON required, posts vacant 16th and 31st January respectively. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

MANCHESTER, 4. ANCOATS HOSPITAL, Mill-street. Applications invited for following house grade posts :—
2 HOUSE SURGEONS (general).
HOUSE SURGEON to Orthopædic and Fracture Department.
HOUSE SURGEON to E.N.T. Department.
HOUSE PHYSICIAN.
Successful candidates will be required to commence duties on 1st February, 1951.

Applications, stating age, and qualifications, with 2 recent testimonials, should be received by undersigned not later than Monday, 18th December.
JOHN H. DAFFORNE, General Superintendent
(Department T.L.).

MANCHESTER NORTHERN HOSPITAL. (General Hospital—116 Beds.) Required, RESIDENT SURGICAL OFFICER (Senior House Officer grade) at above Hospital. Position vacant from 1st January, 1951, and is tenable for 1 year. Salary in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, nationality, qualifications with dates, previous appointments with dates, with names and addresses of 2 referees, to be sent as soon as possible to—
A. T. SAMPSON, Secretary,
North Manchester Hospital Management Committee.
Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of E.N.T. REGISTRAR at the Blackburn Royal Infirmary and other hospitals in the group. Salary £775 p.a. National terms and conditions of service applicable. Residential accommodation available at Blackburn Royal Infirmary if required. Appointment for 1 year in the first instance. Candidates must have been qualified at least 2 years and have had previous experience in an E.N.T. Department. A higher qualification is desirable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 28th December, 1950. Canvassing will disqualify.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for following posts :—

Park Hospital, Davyhulme (General Hospital—426 Beds)
2 SURGICAL HOUSE OFFICERS, one post vacant 1st February, 1951 ; the other 14th February, 1951.
SURGICAL HOUSE OFFICER for service in the Manchester Regional Board Centre for Non-Tuberculous Thoracic Surgery which has just been opened at the Hospital, post now vacant.
SURGICAL HOUSE OFFICER (E.N.T.), post now vacant.
2 MEDICAL HOUSE OFFICERS, one post vacant 1st February, 1951 ; the other 6th February, 1951.
OBSTETRICAL HOUSE OFFICER, post vacant 12th February, 1951.
The Hospital is recognised for training for the F.R.C.S. Diploma and the D.Obst.R.C.O.G. examination. Vacancies occur periodically in the various departments and House Officers are eligible for appointment in another specialty at the end of the original term of service when such vacancies exist.

Eccles and Patricroft Hospital (General Hospital—72 Beds)
HOUSE OFFICER, post now vacant. The work of the Hospital is mainly surgical and there is a busy Outpatient Department.

6 months' appointments in each case. Salary for all posts £350–£450 p.a., according to experience and £100 p.a. will be deducted for residential accommodation and services.

Application forms may be obtained from the Secretary, Park Hospital, Davyhulme.

MANCHESTER, 8. CRUMPSALL HOSPITAL. (Adult General—1225 Beds.) Applications are invited for the following appointments :—

(*a*) HOUSE OFFICERS (medical), 5 vacancies, 1 available as from the middle of January, 3 available as from 1st February, and 1 as from the middle of February, 1951.

(*b*) HOUSE OFFICERS (surgical), 3 vacancies, 1 available as from the beginning of January and 2 available towards the end of January, 1951.

(*c*) HOUSE OFFICER ANÆSTHETIST available as from the beginning of February, 1951. The Hospital is recognised for the D.A.

Appointments are tenable for 6 months and are in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, indicating position applied for, and stating age, nationality, present appointment with date, and previous appointments with dates, with names and addresses of 2 referees, to be sent as soon as possible to—

A. T. SAMPSON, Secretary,
North Manchester Hospital Management Committee.
Crumpsall Hospital, Manchester, 8.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street, MANCHESTER, 8. (Non-Sectarian—105 Beds.) Applications invited for following posts :—

JUNIOR CASUALTY OFFICER AND HOUSE SURGEON, vacant 4th January, 1951.

JUNIOR HOUSE SURGEON, vacant 18th January, 1951.

RESIDENT HOUSE PHYSICIAN, vacant 25th January, 1951.

6 months' appointments. Salaries £350 p.a.–£450 p.a. according to experience, less £100 p.a. emoluments.

Applications, stating qualifications, and experience, with copies of 2 recent testimonials, to be sent to—

M. GRUBER, Hospital Administrator.

MANCHESTER UNITED HOSPITALS. Manchester ROYAL EYE HOSPITAL. Required, HOUSE SURGEON. Salary £350–£450 p.a., according to the number of positions previously held, less £100 p.a. for residential emoluments. Appointment of a practitioner within 3 months of qualification and subject to National Service Acts would be limited to 6 months.

Applications, stating age, details of qualifications, and experience, and nationality, should be forwarded immediately to H. R. NORTH, General Superintendent.

MANCHESTER, 20. WITHINGTON HOSPITAL. (General—850 Beds.) Required, JUNIOR OBSTETRICAL REGISTRAR. Ministry of Health terms and conditions of service.

Applications, stating age, nationality, qualifications, experience, and names of 2 referees, to be forwarded not later than 29th December, 1950, to—

A. H. KEATES, Secretary,
South Manchester Hospital Management Committee.
Christie Hospital and Holt Radium Institute,
Manchester, 20.

MANCHESTER, 20. WITHINGTON HOSPITAL. (General—850 Beds.) Required, JUNIOR SURGICAL REGISTRAR. Hospital recognised for the F.R.C.S. All types of surgical work including genito-urinary available. Ministry of Health terms and conditions of service.

Applications, stating age, nationality, qualifications, experience, and names of 2 referees, to be forwarded not later than 29th December, 1950, to—

A. H. KEATES, Secretary,
South Manchester Hospital Management Committee.
Christie Hospital and Holt Radium Institute,
Manchester, 20.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITAL, near MANSFIELD, NOTTS. (340 Beds.) Required, RESIDENT HOUSE SURGEON (second or subsequent post). Salary in accordance with National Health Service scale.

Applications, stating age, qualifications, experience, and enclosing copies of 2 recent testimonials, to be sent to Secretary.

MORPETH. ST. GEORGE'S HOSPITAL. (1200 Beds.) NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. PSYCHIATRIC REGISTRAR (whole-time) resident. Appointment for 1 year at a salary of £775 or £890 p.a., according to experience and qualifications.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, should be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne 2, not later than 23rd December, 1950. Canvassing will disqualify.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (259 Beds.) Required, JUNIOR HOSPITAL MEDICAL OFFICER in the E.N.T. and Ophthalmic Departments. Appointment recognised for the D.L.O. Salary £700–£50–£1000 p.a., less a deduction of £120 for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport. T. A. JONES, Secretary.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (250 Beds.) Required, HOUSE OFFICER (surgical), vacant about Christmas. Appointment is recognised for the Fellowship of the Royal College of Surgeons. Salary £350–£450 p.a. in accordance with number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

NORTHAMPTON GENERAL HOSPITAL. (487 Beds.) Required, E.N.T. SENIOR HOUSE OFFICER, post vacant about the middle of January, 1951. Post recognised for the F.R.C.S. and for the D.L.O. Salary £670 a year, with deduction of £100 p.a. for residential emoluments.

Applications, giving full particulars, and enclosing copies of 3 recent testimonials, should be received by undersigned before or on 21st December, 1950.

S. G. HILL, Secretary, Northampton and
District Hospital Management Committee.

NORWICH. UNITED NORWICH HOSPITALS. Obstetric HOUSE SURGEON (Male or Female), resident, for duties at West Norwich Hospital, Norwich (279 Beds), and at Drayton Hall Maternity Home, near Norwich (17 Beds), post now vacant. Salary within range £350–£450 p.a., according to experience, less £100 p.a. deduction for residential emoluments.

Applications, stating age, experience, qualifications, with names of 2 referees, to Secretary, Norwich, Lowestoft and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NOTTINGHAM CHILDREN'S HOSPITAL, Chestnut-grove, NOTTINGHAM. (134 Beds.) Applications invited for following appointments :—

HOUSE SURGEON (second or third post).

CASUALTY OFFICER (second or third post).

Salary in accordance with the national scale—i.e., £350, £400, or £450, less £100 for residential emoluments. The Hospital is recognised by the Conjoint Board for D.C.H.

Applications, stating age, qualifications, and nationality, with 2 testimonials, to be sent to the Assistant Secretary, Children's Hospital, Nottingham.

J. H. HARGREAVES, Secretary,
Nottingham No. 2 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, JUNIOR AURAL REGISTRAR (resident), duties to commence immediately. Salary and conditions of service to be in accordance with the published conditions of the National Health Service. The E.N.T. Department has 53 Beds and a large Outpatient Department and is recognised for the D.L.O.

Applications to be addressed to undersigned, stating age, qualifications, and experience, with copies of testimonials.

HENRY M. STANLEY, Secretary,
Nottingham Area No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (Male or Female) for above Hospital. If held by an R practitioner appointment will be for 6 months. Salary and conditions of service in accordance with the published conditions of the Ministry of Health, less £100 p.a. for emoluments. Duties to commence on or about 2nd January, 1951.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

ORMSKIRK. COUNTY HOSPITAL, Wigan-road. (400 Beds.) Applications invited for following appointments, tenable for 6 months :—

HOUSE SURGEON (general surgery).

HOUSE SURGEON with casualty duties.

Both vacant immediately. Salary £350–£450 p.a., according to experience, with a deduction of £100 p.a. for residential emoluments. This is a general hospital providing facilities in several specialties, with a full Consultant Staff. The Hospital is within easy reach of Liverpool and Southport.

Applications, with full details, should be forwarded as soon as possible to— H. E. BECK, Secretary, Ormskirk and
District Hospital Management Committee.
County Hospital, Ormskirk, Lancs.

ORMSKIRK. COUNTY HOSPITAL. (400 Beds.) ORMSKIRK AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT ANÆSTHETIST, post vacant immediately. 6 months' appointment. Salary £350–£450 p.a., according to number of posts previously held.

Applications, with full details, and 2 names for reference, should be forwarded immediately to H. E. BECK, Secretary.
County Hospital, Ormskirk, Lancs.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE invite applications for following appointments :—

HOUSE SURGEON, Gosport War Memorial Hospital (General—68 Beds), vacant now.

PÆDIATRIC HOUSE PHYSICIAN, St. Mary's Hospital, vacant 8th January, 1951. There is a Pædiatric Unit of 60 Beds and the post is recognised for candidates preparing for the D.C.H.

HOUSE PHYSICIANS AND HOUSE SURGEONS, St. Mary's Hospital, vacant shortly. General hospital of 1100 Beds including medical, surgical, maternity, geriatric, and mental.

HOUSE SURGEON, Royal Portsmouth Hospital, vacant 27th December, 1950. General acute hospital of 305 Beds.

Salary £350–£450 according to experience, less £100 for residential emoluments.

Applications should give details of age, experience, and qualifications, and names of 2 referees, and be submitted to the Secretary, 18, Landport-terrace, Portsmouth.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (second or third post) required, post vacant 24th January, 1951. Salary and conditions of service in accordance with the National Health Service recommendations. The Hospital is recognised by the Royal College of Surgeons.

Applications should be sent to the Secretary, Poole General Hospital, Dorset.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST required, post vacant 8th January, 1951. Salary and conditions of service in accordance with the National Health Service recommendations.

Applications should be sent to the Secretary, Poole General Hospital, Dorset.

PRESTON ROYAL INFIRMARY. (401 Beds.) Required, HOUSE OFFICER (Ophthalmic Department). Recognised for D.O.M.S. National Health Service salaries and conditions.

Applications, stating full particulars, with copy testimonials, should be sent to the Secretary, Preston and Chorley Hospital Management Committee, Royal Infirmary, Preston.

JOHN GIBSON, Secretary.

PETERBOROUGH. THE MEMORIAL HOSPITAL. Required, HOUSE PHYSICIAN, post vacant 1st February. Appointment for 6 months.

Applications, with testimonials, should be addressed to the Secretary, Peterborough Area Hospital Management Committee, The Memorial Hospital, Midland-road, Peterborough.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOSPITAL. Required, HOUSE SURGEON at above Hospital (120 Beds). Appointment will be resident and the salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, should be sent to the Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, as soon as possible.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOSPITAL. Required, SENIOR HOUSE OFFICER at above Hospital. Appointment will be resident and the salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, should be sent to the Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, as soon as possible.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications invited from registered medical practitioners for appointments of :—

(1) HOUSE SURGEONS (first posts), Greenbank Road Section, vacant 1st and 7th February, 1951.

(2) HOUSE PHYSICIAN (second or third post), Greenbank Road Section, vacant 1st March, 1951.

(3) HOUSE SURGEONS (first and second or third posts), Devonport Section, vacant immediately.

(4) HOUSE SURGEON (second or third post), Freedom Fields Section, vacant 22nd December, 1950.

(5) ANÆSTHETIC HOUSE OFFICER (second or third post), Freedom Fields Section, vacant 1st March, 1951.

DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY.

(6) HOUSE SURGEON (second or third post), Alexandra Maternity Home, Devonport, vacant 17th February, 1951.

(7) HOUSE SURGEON (second or third post), Freedom Fields Section, vacant 1st March, 1951. Wide experience can be obtained in obstetrics, including ante- and post-natal clinics.

Appointments for 6 months and terminable by 1 month's notice on either side. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, to be sent by 2nd January, 1951, to—

ARTHUR R. CASH, Secretary, Plymouth, South Devon and East Cornwall General Hospital Group.
Head Office, Greenbank-road, Plymouth.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) Required, HOUSE OFFICER (medical), post vacant from 1st February. Appointee will work under the directions of the Consultant Physician and the Pædiatrician. Salary £350–£450 p.a., in accordance with the number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

REDRUTH, CORNWALL. CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL. (159 Beds—4 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN (Male or Female), post vacant 18th January, 1951. Salary £350 or £400 p.a., depending on experience, with £100 deduction in respect of board and lodging. R practitioners within 3 months of qualification may apply.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 testimonials, should be forwarded to Administrative Assistant, Camborne-Redruth Miners' and General Hospital, Redruth, Cornwall.

RYDE. ROYAL ISLE OF WIGHT COUNTY HOSPITAL. HOUSE PHYSICIAN required at above Hospital (but may be required to serve at any hospital within the group), vacant 19th January, 1951. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Isle of Wight Group Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

RYDE, I.W. ROYAL ISLE OF WIGHT COUNTY HOSPITAL. HOUSE SURGEON required for above Hospital (but may be required to serve at any Hospital within the group). Post recognised for F.R.C.S., vacant immediately. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Isle of Wight Group Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

RHYL. ROYAL ALEXANDRA HOSPITAL. Applications invited for the following appointments :—

(*a*) RESIDENT HOUSE SURGEON. Salary and conditions of service in accordance with the terms issued by the Ministry of Health. Post tenable in the first instance for 6 months.

(*b*) RESIDENT HOUSE PHYSICIAN. Salary and conditions of service in accordance with the terms issued by the Ministry of Health. Post tenable in the first instance for 6 months.

Applications, with full details of qualifications, and training, accompanied by 2 testimonials, to be sent forthwith to—

WILLIAM ROBERTS, Secretary,
Clwyd and Deeside Hospital Management Committee.
" Rhianfa," Russell-road, Rhyl, 4th December, 1950.

READING. ROYAL BERKSHIRE AND BATTLE HOSPITALS. Required, RESIDENT JUNIOR REGISTRAR (Male) to the Accident and Orthopædic Departments of above Hospitals, post vacant 18th December, 1950. Duties will include work in the Casualty Departments. Salary £670, less £100 for board-residence. Appointment subject to terms and conditions of service as published by the Ministry of Health.

Applications, stating age, nationality, qualifications with dates, previous experience, with names of 2 referees, should be sent to the Chief Administrative Officer, Reading and District Hospital Management Committee, 3, Craven-road, Reading, Berks, immediately.

RAWTENSTALL. ROSSENDALE GENERAL HOSPITAL. There is a vacancy for JUNIOR MEDICAL REGISTRAR (resident) at above Hospital. Salary and conditions of service in accordance with those laid down for hospital medical staff (England and Wales). Hospital is at present in the process of being upgraded and will provide approximately 40 acute medical beds, and in addition there will be responsibility for certain chronic sick wards. Successful applicant required to work under the direction of the Consultant Physician.

Applications, giving full particulars as to qualifications and experience, with copies of recent testimonials, should be made immediately to— H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

RICHMOND, SURREY. ROYAL HOSPITAL. (121 Beds.) KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGION. RESIDENT HOUSE OFFICER (Surgeon) required for 6 months commencing the 1st February, 1951. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, nationality, and qualifications with dates, with copy testimonials, should be forwarded to the Secretary of the Committee, at the Royal Hospital, Richmond, Surrey, immediately.

RICHMOND, SURREY. ROYAL HOSPITAL. (121 Beds.) KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGION. RESIDENT HOUSE OFFICER (Physician) required for 6 months commencing 1st January, 1951. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, nationality, qualifications with dates, with copy testimonials, should be forwarded to the Secretary of the Committee, at the Royal Hospital, Richmond, Surrey, by 21st December, 1950.

ROCHFORD. GENERAL HOSPITAL. (572 Beds.) SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Required, 3 HOUSE PHYSICIANS. Appointments tenable for 6 months and vacant on 23rd January, 29th January, and 30th January, 1951, respectively. Salary and conditions of service applicable to House Officer grade. Unfurnished quarters may be available for two of these appointments if any of the successful applicants are married.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 2 recent testimonials, should be forwarded to undersigned at the General Hospital, Rochford, Essex, by 28th December, 1950.

J. C. FIELD, Secretary.

ROCHFORD. GENERAL HOSPITAL. (572 Beds.) SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON. Post is now vacant and tenable for 6 months. Salary and conditions of service applicable to House Officer grade.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 2 recent testimonials, should be forwarded to undersigned at the General Hospital, Rochford, Essex, by 28th December, 1950. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Required, HOUSE SURGEON at above Hospital, post vacant from 10th January, 1951. Resident post tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, present appointment, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should reach the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, not later than 30th December, 1950.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON (resident) in the Orthopædic and Accident Unit at above Hospital. The service consists of 100 Beds equally divided between traumatic surgery and " cold " orthopædics. Post vacant from 25th January, 1951, and is tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, present appointment, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should reach the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, not later than 30th December, 1950.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (238 Beds.) Applications invited from registered medical practitioners (Male) for post of HOUSE SURGEON, vacant at above Hospital on 24th January, 1951. Resident post tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers according to previous posts held, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should be forwarded to the Secretary, Romford Group Hospital Management Committee at Oldchurch Hospital, Romford, as soon as possible.

ROCHDALE INFIRMARY. (General—109 Beds.) Required, SENIOR HOUSE PHYSICIAN, post vacant in early February, 1951. Appointment for 1 year. Remuneration £670 p.a., and the conditions of service will be in accordance with the terms of service for hospital medical staff in the National Health Service.

Applications should be sent immediately to—

S. HODKINSON, Secretary, Rochdale and District Hospital Management Committee.

Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE INFIRMARY. Required, Senior House SURGEON, post vacant during January, 1951. Appointment for 1 year. Remuneration £670 p.a., and the conditions of service will be in accordance with the terms of service for hospital medical staff in the National Health Service. This appointment is recognised by the Royal College of Surgeons for 6 of the 12 months' period of surgical training required of candidates for the final fellowship examinations.

Applications should be sent immediately to—

S. HODKINSON, Secretary, Rochdale and District Hospital Management Committee.

Central Offices, Birch Hill Hospital, Rochdale.

SCOTLAND. CRAIGTOUN MATERNITY HOSPITAL, MOUNT MELVILLE, near ST. ANDREWS. (39 Beds.) Applications invited for appointment of RESIDENT JUNIOR REGISTRAR, commencing 1st February, 1951. Salary £670 p.a., with deductions for residential emoluments, and subject to National Health Service (Scotland) (Superannuation) Regulations, 1950. Post tenable for 1 year in the first instance. The Hospital was opened in 1949 and is well equipped. The medical staff establishment consists of 1 Consultant and 1 Registrar.

Applications, containing full particulars of qualifications, and experience, with names of 3 referees to whom reference may be made, should be forwarded immediately to the Secretary, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

SHREWSBURY. ROYAL SALOP INFIRMARY/COP-THORNE HOSPITAL. (500 Beds.) Required, SENIOR HOUSE PHYSICIAN (Male or Female) at Copthorne Hospital, Shrewsbury, vacant immediately. Salary £450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, with copy testimonials, should be sent to—

J. P. MALLETT, Secretary,

Shrewsbury Group 15 Hospital Management Committee.

Royal Salop Infirmary, Shrewsbury, 24th October, 1950.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER (Male or Female), vacant immediately. Salary £350–£450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Secretary.

Royal Salop Infirmary, Shrewsbury, 23rd September, 1950.

SHEFFIELD. NETHER EDGE HOSPITAL. Required, RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER. Main duties will be in connection with the new Maternity Unit but will also be required to assist on the chronic sick wards. Salary scale £700–£50–£1000 p.a. Appointment for a period not exceeding 3 years in the first instance.

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,

Sheffield No. 1 Hospital Management Committee.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.R.C.S. England.) Required, RESIDENT HOUSE SURGEON (orthopædics), post vacant 1st January, 1951. After 6 months' service candidates will be eligible, if so desired, to obtain resident posts as House Surgeon, House Physician, or House Surgeon (obstetrics and gynæcology).

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,

Sheffield No. 1 Hospital Management Committee.

SHEFFIELD. UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY. Required, HOUSE SURGEON (Male or Female) to the Orthopædic Department, post now vacant. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health for House Officers.

Applications should be sent forthwith to—

FRANK HART, Superintendent.

Royal Infirmary, Sheffield, 6.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. THE CHILDREN'S HOSPITAL UNIT, Western Bank, SHEFFIELD, 10. Required, HOUSE PHYSICIAN for the Professorial Unit to commence duty about mid-January. Salary £350–£450 p.a., according to experience.

Applications to be sent immediately to the Superintendent.

STOCKPORT INFIRMARY. (175 Beds.) Applications invited for the posts of :—

RESIDENT HOUSE OFFICER (general surgery and ophthalmology—approved under D.O.M.S. regulations), post vacant 1st January, 1951.

RESIDENT HOUSE OFFICER (general surgery and E.N.T. —approved under D.L.O. regulations), post vacant 11th January, 1951.

Salary, terms, and conditions of service as laid down by the Ministry of Health for hospital medical and dental staffs.

Applications, stating age, nationality, and qualifications, with names of 2 referees or copies of 2 testimonials, to be addressed to the Administrative Officer.

H. G. PRICE, Secretary,

Stockport and Buxton Hospital Management Committee.

5th December, 1950.

STOCKPORT AND BUXTON HOSPITAL MANAGE-MENT COMMITTEE. Required, NON-RESIDENT JUNIOR REGISTRAR to the E.N.T. Departments in the Group, post vacant 15th January, 1951. Salary, terms, and conditions of service as laid down by the Ministry of Health for hospital medical and dental staffs.

Applications, stating age, nationality, and qualifications, with names of 2 referees or testimonials, to be addressed forthwith to H. G. PRICE, Secretary.

59B, Shaw Heath, Stockport, 4th December, 1950.

STOCKPORT. STEPPING HILL HOSPITAL. (463 Beds.) Applications invited from registered medical practitioners for posts of :—

HOUSE OFFICER (medical).

HOUSE OFFICER (surgical).

Salary and conditions of service in accordance with Ministry of Health circular.

Applications, stating age, nationality, and qualifications, with names of 2 referees or copies of 2 testimonials, to be addressed to the Medical Superintendent, immediately.

H. G. PRICE, Secretary,

Stockport and Buxton Hospital Management Committee.

5th December, 1950.

SLOUGH, BUCKS. UPTON HOSPITAL. Casualty OFFICER required. Salary on national scale.

Applications, stating age, and qualifications, to be sent to the Administrative Officer.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE SURGEON (resident) required immediately. Post tenable for 6 months. Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE PHYSICIAN required, post vacant mid-January. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON INFECTIOUS DISEASES HOSPITAL AND SANATORIUM. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited from appropriately qualified and experienced persons for appointment of MEDICAL REGISTRAR (resident). Applicants should have had experience in the treatment of infectious diseases and pulmonary tuberculosis. A Thoracic Unit is in the process of being developed and the appointment may entail certain medical duties associated with that unit. Salary and conditions of service in accordance with the agreed terms and conditions of service of hospital medical staff. Provisions of the National Health Service superannuation regulations will apply.

Forms of application, which will be forwarded by the undersigned on receipt of a stamped addressed envelope, must be returned within 14 days of publication of this advertisement. Canvassing will be a disqualification, but candidates are not thereby precluded from visiting the Hospital.

FRANK JENNINGS, Secretary,

Southampton Hospital Management Committee.

Bullar-street, Southampton.

SOUTHAMPTON INFECTIOUS DISEASES HOSPITAL AND SANATORIUM. HOUSE OFFICER (Male or Female) required at end of the year. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments. Terms and conditions of service in accordance with those nationally advocated.

Applications, with copies of references, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON (resident), post vacant 31st December, 1950. Tenable for 6 months. This Hospital provides a comprehensive orthopædic service and is the centre to which all trauma from a large industrial town and port is directed. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) HOUSE SURGEONS (3) required. Posts vacant December and mid-January. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

STAMFORD AND RUTLAND HOSPITAL. (105 Beds.) Required, HOUSE OFFICER (surgical). Salary £350–£450 p.a., according to number of posts held, from which a deduction at rate of £100 p.a. made in respect of residential emoluments. Appointment starting immediately for 6 months in the first instance.

Applications, stating age, qualifications, nationality, with copies of recent testimonials, should be forwarded to the Secretary, Stamford and Rutland Hospital, Stamford, Lincolnshire.

ST. ALBANS CITY HOSPITAL. Required, Casualty OFFICER (Male). Appointment for 6 months in the first instance. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications should be addressed to the Secretary, Osterhills, Normandy-road, St. Albans.

ST. ALBANS. HILL END HOSPITAL, Hill End, near ST. ALBANS. Required, RESIDENT ANÆSTHETIST REGISTRAR in the Plastic and Jaw Unit of above Hospital. Previous anæsthetic experience is essential. Appointment for 1 year in the first instance. Salary according to the terms and conditions of hospital medical and dental staffs (England and Wales). Post vacant in January and successful applicant will be required to take up his duties as early as possible in that month.

Applications, stating age, qualifications, and experience, with names and addresses of 2 referees, to be forwarded to the Group Secretary, Osterhills, Normandy-road, St. Albans.

ST. HELENS HOSPITAL. (183 Beds.) Required, Resident HOUSE PHYSICIAN. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Applications to be forwarded as soon as possible to—
N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

ST. HELENS HOSPITAL. (183 Beds.) Required, Resi-DENT HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded as soon as possible to—
N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) at above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—
O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) to the E.N.T. Department of above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—
O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (second or third appointment) to the Orthopædic Department.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT CASUALTY OFFICER (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SUTTON, SURREY. BANSTEAD HOSPITAL. General DENTAL PRACTITIONER required (part-time) for a minimum of 2 half-day sessions per week. Appointment subject to the terms and conditions of service of hospital medical and dental staffs of the National Health Service. Salary £150 p.a., per weekly half-day session, plus travelling expenses.

Apply, Physician-Superintendent.

SWINDON HOSPITALS. Accident and Orthopædic DEPARTMENTS. Required, RESIDENT HOUSE SURGEONS to above, which are associated with the Wingfield-Morris Orthopædic Hospital, Oxford. Salary in accordance with the approved terms, including the additional £50 p.a.

Applications, giving age, qualifications, and details of service, with names of 1–3 referees, should be sent to the Secretary, Swindon and District Hospital Management Committee, Victoria Hospital, Swindon, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. Required, HOUSE OFFICER (surgical), first post, combining main duties at Longton Hospital, Stoke-on-Trent (55 Beds). Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to undersigned at Princes-road, Stoke-on-Trent.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. NORTH STAFFS ROYAL INFIRMARY. (475 Beds.) Required, HOUSE OFFICER (general surgery), second or third appointment. Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to undersigned at Princes-road, Stoke-on-Trent.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (1000 Beds.) Applications invited for following HOUSE OFFICER posts, Male or Female :—

Surgical (2), posts vacant December.
Surgical (1), post vacant 31st January, 1951.

Posts recognised for F.R.C.S. Salary in each case in accordance with National Health Service scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to the Medical Superintendent at the Hospital.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (1000 Beds.) Required, HOUSE OFFICER (medical), pædiatrics, Male or Female, post vacant 1st January, 1951. Post recognised for D.C.H. Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service to the Medical Superintendent at the Hospital.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. HAYWOOD HOSPITAL. (96 Beds.) Required, HOUSE OFFICER (surgical), second post. Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to undersigned at Princes-road, Stoke-on-Trent.
THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Required, HOUSE PHYSICIAN for the Thoracic Unit at above Hospital. Appointment is for 6 months. Salary £350, £400, or £450 p.a., according to number of posts previously held. In each case a deduction of £100 p.a. for board, lodging, &c. The Hospital accommodates acute medical and surgical cases, and in addition to Thoracic Unit has Orthopædic and Rehabilitation Centres.

Applications, giving full particulars of qualifications, &c., to— G. L. BANNER, Secretary, Hospital Management Committee No. 10, Wakefield B Group.
Victoria Chambers, Wood-street, Wakefield, December, 1950.

WARWICK HOSPITAL. Required, Resident House SURGEON (Male or Female). Good experience in General and Thoracic Surgery Units. Salary £350–£450 p.a., depending upon experience, less £100 p.a. for residential emoluments.

Applications, with 2 recent testimonials, should be sent to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

WELLS, SOMERSET. MENDIP HOSPITAL. (900 Beds.) Applications invited for appointment of resident (married or single) JUNIOR HOSPITAL MEDICAL OFFICER, with experience in psychiatry, for duty at above Mental Hospital. Salary on scale £700–£50–£1000 p.a., with a charge of £150 p.a. for quarters and residential services, or, in the case of a married man, a charge for a flat. Appointment in accordance with the terms and conditions of service issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names and addresses of 2 referees, should be forwarded to the Medical Superintendent, Mendip Hospital, Wells, Somerset, not later than 10 days after publication of this advertisement.

WELWYN GARDEN CITY MATERNITY HOSPITAL. Locum REGISTRAR required immediately for duties mainly at above Hospital for gynæcological and obstetric work for a period of up to 3 months. Salary £775 p.a., in accordance with the terms and conditions of hospital medical and dental staffs (England and Wales).

Applications, giving full particulars as to age, experience, and qualifications, with names of 2 referees, to be forwarded to the Secretary, Mid Herts Group Hospital Management Committee, Osterhills, Normandy-road, St. Albans.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. WHELLEY HOSPITAL. HOUSE PHYSICIAN (Male or Female), required for above Hospital, post vacant 17th January, 1951. Appointeee will be resident at Whelley Hospital, but will also be required to undertake general medical duties at the Royal Albert Edward Infirmary, Wigan, a major general hospital of 225 Beds, where there is ample opportunity of gaining a wide experience in the various branches of medicine. Preference given to candidates taking a higher degree. Salary and conditions of service in accordance with the terms laid down for medical and dental staffs. Appointment for 6 months in the first instance.

Applications, stating age, nationality, and qualifications with names of 2 referees, should be sent as soon as possible to—
Knowsley House, Wigan. T. W. HURST, Secretary.

WOLVERHAMPTON HOSPITAL MANAGEMENT COM-MITTEE, GROUP NO. 16, BIRMINGHAM REGION. Applications invited from registered medical practitioners for following appointments :—

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)
JUNIOR CASUALTY OFFICER, vacant now.
HOUSE SURGEON (Fracture and Orthopædic Department), vacant now.
HOUSE SURGEON (Ear, Throat and Nose Department), vacant 31st December.
REGISTRAR (Fracture and Orthopædic Department), vacant 24th December.

All appointments subject to terms and conditions of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Senior Surgeon, vacant 1st January, 1951. Salary £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for following post :—

Military Hospital, York (Civilian Wing) (52 Beds)

RESIDENT MEDICAL OFFICER. This Hospital is an Annexe to the County Hospital, York. There are at present 14 gynæcological beds, 28 surgical beds, and 10 medical beds. Appointment for 6 months and is vacant immediately. Salary £350 for first post held, £400 for second post held, £450 for third post held, less £100 for residence.

Applications, giving details of age, nationality, qualifications, and experience, with names of 2 referees, to be forwarded immediately to—

F. A. MILNES, F.H.A., A.L.A.A., Secretary,
York A and Tadcaster Hospital Management Committee.
Bootham Park, York.

CHANNEL ISLES. JERSEY GENERAL HOSPITAL. (200 Beds.) Applications invited for resident post of SURGICAL REGISTRAR. Post vacant 15th December, 1950, and appointment is for 12 months. Applicants should have had surgical experience and preference given to holders of the F.R.C.S. Salary £650 p.a.

Applications, stating age, nationality, qualifications, and experience, should be sent to the President, Hospital Committee, Jersey General Hospital, St. Helier, Jersey.

Public Appointments

BRIGHTON. COUNTY BOROUGH OF BRIGHTON. The Council invite applications for appointment of MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER at a commencing salary of £2000 p.a. The maximum salary will be determined by the Council in due course when an appropriate national scale has been fixed.

Particulars of appointment and form of application may be obtained from me. Applications must be delivered at my office before 12 noon, 15th January, 1951. Canvassing, directly or indirectly, will disqualify. J. G. DREW, Town Clerk.

Town Hall, Brighton, 14th November, 1950.

COLONIAL MEDICAL SERVICE. In the larger Colonies MEDICAL OFFICERS are required for general duties, including hospital and district work. These appointments offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Appointments can be made on a permanent basis with pension (non-contributory) at age of 50 or 55, or on a temporary basis with gratuity. Secondment from the National Health Service can usually be arranged for periods up to 6 years with continuation of superannuation contributions and the payment of a resettlement grant on reversion to the National Health Service. Salaries range from £860 to £1630 a year, the starting salary depending upon age and experience. In most territories in Africa the scale for newly appointed doctors with an approved higher qualification is £1050–£1600 a year, with a higher point of entry according to experience. There are many specialist and administrative posts with salaries above this scale available for officers in the Service on promotion. Free passages are granted in both directions. Income-tax is very low. Tours of service vary from 10 months in Nigeria to 4 years in Kenya. Houses with heavy furniture are provided in most territories at a rent of about 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for those who wish to acquire higher qualifications. Social and recreational amenities are good. Officers serving in East and Central Africa usually prefer to educate their children within that area, where schooling is available, or in South Africa. The short tours in West Africa enable frequent visits to be made to children being educated at home. Many officers have their children with them in West Africa until they reach school age.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1. (Ref. no. 27215/14.)

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Positions vacant :—

1. MEDICAL SUPERINTENDENT, Woodlands Sanatorium, Galway.

2. ASSISTANT MEDICAL OFFICER—(*a*) Crooksling Sanatorium, Dublin ; (*b*) St. Mary's Chest Hospital, Dublin (2 posts) ; (*c*) Castlerea Sanatorium, co. Roscommon (2 posts).

Salary (for each post) : £900–£27–£1100 p.a. Essential qualifications (for each post) include at least 3 years' experience as whole-time medical officer in a tuberculosis institution, including at least 6 months' experience in a recognised institution for treatment of pulmonary tuberculosis, containing at least 100 Beds and at which major thoracic surgery was carried out.

Application forms for, and further particulars of, abovementioned posts may be obtained from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for accepting completed application forms : 5 P.M. on 22nd December, 1950.

FACTORY DOCTORS : Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor under the Factories Acts, 1937 and 1948, is vacant. Applications should be sent to the Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
CASTLE BYTHAM	.. LINCOLN	.. 6TH JANUARY, 1951

GLAMORGAN EDUCATION AUTHORITY. Rhondda URBAN DISTRICT COUNCIL COMMITTEE FOR EDUCATION. Applications invited from registered medical practitioners of either sex for appointment as ASSISTANT MEDICAL OFFICER, under the supervision of the District School Medical Officer, at a salary of £734 19s. 3d., by annual increments of £25 to £934 19s. 3d. p.a. Successful candidate, if in need of housing accommodation and not already a resident of the Rhondda Urban Area, will be offered the tenancy of a Council house.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received not later than 3rd January, 1951.

D. J. JONES, Clerk of the Council.

H.M. COLONIAL RESEARCH SERVICE. East African MEDICAL SURVEY. Vacancies exist in the above Unit in Tanganyika for 4 MEDICAL RESEARCH OFFICERS, whose duties will include the carrying out of physical examinations of Africans as part of a large-scale medical survey of isolated populations. African assistants will be available. Candidates, who should not be over 35 years of age, should hold medical qualifications registrable in the United Kingdom. Tropical experience is an advantage but not essential, as opportunities will be provided on arrival in East Africa of acquiring knowledge of local disease conditions, &c., if this is necessary. Emoluments (including overseas research allowance) between £840 and £1500 p.a. according to age and qualifications. One post is open to a woman. Selected candidates will be required to proceed to East Africa by air, to live in hotel or temporary accommodation until permanent houses are ready in 1951, and to serve in isolated stations. Salary subject to 10% deduction for official quarters. House allowance payable for cost of private or hotel accommodation in excess of 10% of salary. Free passages for officer and his wife and children under 13 years. Outfit allowance of £60. Superannuation will in due course be provided under a Colonial superannuation scheme but in the meantime existing F.S.S.U. policies will be maintained, where possible, on usual basis or gratuity will be payable. Cost of living in Tanganyika is not expensive and taxation is low.

Forms of application may be obtained from the Under-Secretary of State, Colonial Office, Research Department, Sanctuary Buildings, Great Smith-street, S.W.1.

LANCASHIRE COUNTY COUNCIL. Applications invited from registered medical practitioners for appointments of 7 ASSISTANT DIVISIONAL MEDICAL OFFICERS. Possession of D.P.H. desirable. Salary £860–£50–£1060 p.a. Travelling and subsistence allowances where applicable. Posts superannuable and subject to medical examination.

Application forms with full particulars obtainable from County Medical Officer of Health, County Offices, Preston.

LANCASHIRE COUNTY COUNCIL. Applications invited for appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH from medical practitioners possessing the D.P.H. or its equivalent. The Deputy County Medical Officer will act under the direct control of the County Medical Officer of Health and will be required to carry out such duties that may be assigned to him. Salary scale £1700, by annual increments of £75 to £2000 p.a., subject to review in the light of any award applicable to the salaries of Medical Officers issued by the National Arbitration Tribunal. Appointment subject to passing a medical examination and is superannuable. It is a condition of appointment that the successful applicant shall reside in or near Preston.

Forms of application are obtainable from the County Medical Officer of Health, County Offices, Preston, to whom they must be returned by 30th December, 1950.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (whole time) required initially in Area 10 (Twickenham, Feltham, Staines and Sunbury). Duties mainly supervision of health of mothers and children attending antenatal, postnatal and infant welfare clinics, day nurseries, together with routine medical inspections at schools and attendance at clinics for school children. Subject to certain conditions, possibility of 2 sessions per week hospital work, but no additional fee will be payable therefor. D.P.H. or D.C.H. an advantage. Salary £675–£25–£875 p.a., plus cost-of-living bonus (now £60 p.a.) subject to revision when new scales issued. Previous local authority service in similar capacity may determine commencing salary as Askwith Memorandum. Established, subject to medical examination and prescribed conditions.

Applications (no forms), names of 2 referees to Area Medical Officer, Elmfield House, High-street, Teddington, Middlesex, by 30th December (quoting H.862.L.). Canvassing disqualifies.

C. W. RADCLIFFE, Clerk of the County Council.

ROYAL AUSTRALIAN NAVY

Applications are invited from legally qualified medical practitioners for appointment as MEDICAL OFFICERS in the Royal Australian Navy. Previous commissioned service on full pay in British Forces may be taken into consideration in determining pay and seniority on appointment. Minimum yearly emoluments on appointment for single officer £1085 and for married officer £1244. Increment of £54 15s. payable after 2 years' service. Gratuity of £500 payable after completion of 4 years' service, or pro-rata on approved discharge after completion of 2 years' service. Emoluments payable in sterling currency until departure from U.K. First appointment is for short term service with prospect, if desired, of appointment to Permanent List.

Full details may be obtained from R.A.N. Liaison Officer, Canberra House, 85, Jermyn-street, London, S.W.1, and Secretary, Department of Navy, Melbourne, S.C.1.

LEICESTER. CITY OF LEICESTER EDUCATION COMMITTEE. Applications invited for post of SENIOR ASSISTANT SCHOOL MEDICAL OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH from registered medical practitioners holding recognised qualifications in public health or state medicine. The appointment is primarily that of Senior Assistant to the Senior Medical Officer (Education), but the duties in addition to work in connection with the school health service will include those of Assistant Medical Officer of Health. Appointee will work under the general control of the Medical Officer of Health, who is also School Medical Officer, and will be expected to carry out the above duties and such other duties as are assigned to him. Salary £950–£25–£1150 p.a. Appointment is subject to the provisions of the Local Government Superannuation Act, 1937, is terminable by three months' notice on either side, and successful candidate will be required to pass a medical examination.

Further details of appointment may be obtained by reference to undersigned, and applications, with copies of 3 testimonials, should be received by 6th January, 1951.

ELFED THOMAS, Director of Education.

Education Department, Newarke-street, Leicester.

MINISTRY OF SUPPLY. Applications are invited from suitably qualified scientists for appointments at a Research Establishment in South West England. Candidates should be honours graduates with experience in medical or veterinary research and should have specialised in bacteriology, biochemistry, biophysics, immunology, virology, or pathology. Medical or veterinary qualifications would be an advantage. Wide experience and ability to direct and coördinate the research work of others are essential. The posts carry F.S.S.U. benefits and appointments will be made according to qualifications and experience on the following ranges: Deputy Chief Scientific Officer £1750–£2025, Senior Principal Scientific Officer £1420–£1650, rates for Women are somewhat lower.

Application forms are obtainable from the Ministry of Labour National Service Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting G339/50A. Completed forms, together with full details of experience and references to any published papers, should be returned to the above address by 8th January, 1951.

MINISTRY OF SUPPLY. Applications are invited for unestablished appointments at a Research Establishment in South West England. Candidates should be honours graduates with experience in medical or veterinary research. Specialisation in one or more of the following fields is necessary—viz., experimental pathology, bacteriology, virology, immunology. Experience in directing and coördinating the research work of others is desirable for the higher posts. Posts carry F.S.S.U. benefits, and appointments will be made according to qualifications and experience on following ranges: Principal Scientific Officer £960–£1295; Senior Scientific Officer £670–£860. Rates for women somewhat lower.

Application forms obtainable from Ministry of Labour and National Service, Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting G326/50. Completed forms, with full details of experience and references to published papers, should be returned to above address, by 6th January, 1951.

ROTHERHAM. COUNTY BOROUGH OF ROTHERHAM. Health Department. Applications invited from duly qualified medical practitioners (Male or Female) for post of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER at a salary of £735 p.a., rising to £935 by annual increments of £25. Duties will be chiefly in connection with the school health and maternity and child-welfare sections, together with any other duties which may be allocated by the Medical Officer of Health. Appointment is full-time and successful candidate will not be allowed to engage in private practice. Post will be subject to 3 months' notice on either side at any time and to the Council's regulations relating to sick pay and service conditions. Successful candidate will be required to pass a medical examination for superannuation purposes.

Forms of application and conditions of appointment may be obtained from the Medical Officer of Health, Municipal Offices, Rotherham, and must be returned to undersigned, accompanied by copies of 3 testimonials of recent date, endorsed "Assistant Medical Officer" within 14 days of appearance of this advertisement.

JOHN S. WALL, Town Clerk.

Municipal Offices, Rotherham.

ROYAL NAVAL MEDICAL SERVICE

Candidates are invited for service as Medical Officers in the Royal Navy—preferably below 28 years.

They must be British subjects whose parents are British subjects, and be medically fit. No examination will be held but an interview will be required.

Initial entry will be for 4 years' short service after which gratuity of £600 (tax free) is payable, but permanent commissions are available for selected short service officers.

Ante-dates of seniority up to 12 months may be given for service in recognised civil hospitals.

For full details apply MEDICAL DIRECTOR-GENERAL Admiralty, S.W.1.

SOUTHERN RHODESIA GOVERNMENT SERVICE. Applications invited from Male medical practitioners for appointment as a GOVERNMENT MEDICAL OFFICER in Southern Rhodesia. Salary scale is £804–£33–£1200 p.a., plus the right to private practice or an allowance in lieu, at present at the rate of £200 p.a., at certain stations where private practice is not permitted. Commencing salary may be higher than the minimum of the scale (not exceeding 4 steps in such scale) in recognition of approved previous experience. Cost-of-living and children's allowances will also be paid in terms of the regulations. Successful applicant will be required to pass a medical examination by a Southern Rhodesia Government or other duly appointed medical officer and will be provided with travelling fare from place of appointment to Southern Rhodesia for himself and, if applicable, half the cost of fares for his wife and dependent children under the age of 18 years. He will be employed in the first instance as a Relieving Medical Officer. Official duties may include the supervision of European and Native Hospitals and Native Clinics; attendance upon Government patients and school children; performance of medico-legal work; routine public health duties; and any other work of a medical nature which may be allocated by the Secretary for Health. Motor transport will be provided for official duties.

Applications in duplicate, stating age, nationality, marital condition, qualifications, and previous experience giving exact dates, the earliest date on which duty could be assumed, and giving names of 2 persons to whom reference may be made, should be forwarded, with copies of 3 recent testimonials, to reach the Secretary to the High Commissioner for Southern Rhodesia, 429, Strand, London, W.C.2, on or before the 20th January, 1951. Canvassing will disqualify applicants.

General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

EXECUTIVE COUNCIL FOR THE COUNTY BOROUGH OF PRESTON. Applications invited from doctors wishing to undertake general medical service in the County Borough of Preston area, to fill a VACANCY which has arisen as a result of resignation. List at present approximately 2300. Residence and surgery available. Apply, on Form E.C.16A, to undersigned not later than 23rd December, 1951.

W. LEYLAND, Clerk of the Council.

Overseers' Buildings, Saul-street, Preston.

MARTON/PRINCETHORPE, near RUGBY. Applications invited for VACANCY (rural). List at present approximately 1700. Residence and surgery not available. Apply to E.C.16A before 30th December, 1950 to—

R. V. NELLTHORP, Clerk, Warwickshire Executive Council.

15, Waterloo-place, Leamington Spa.

Miscellaneous

British European Airways invite applications for a senior medical appointment as Regional Medical Officer. Applicants should be between 28 and 40 years of age; must hold British medical registration, have a knowledge of aviation medicine and the medical supervision of aircrews. Preference will be given to candidates with experience in medical administration, public health, or tropical medicine. Commencing salary £1400 p.a. Successful candidate will be required to join Corporation pension scheme.—Applications, giving full details of education, professional appointments, &c., should be made on an application form obtainable from General Manager (S & S), B.E.A. Head Office, Keyline House, Northolt, Ruislip, Middlesex. The completed form, accompanied by a recent photograph, should be returned not later than 20th December.

Tanganyika. Assistant Medical Officer required for gold-mine; altitude 4500 feet. Tour 30 months with 5 months' leave. Passages for wife and proportion children's. Free house, basic furniture. Salary according to experience. Newly qualified doctor £900.—Apply in writing before 31st January, with copies of references, to Box J237, c/o STREET'S, 110, Old Broad-street, London, E.C.2.

Assam. A British Medical Officer is required for a group of Tea Estates; age 28–36 years; tropical clinical and hygiene experience an advantage. Basic salary £1170 p.a., increasing by £90 every 2 years to a maximum of £1530 p.a. Overseas pay and local allowances amount to further £504 p.a.; car allowance additional; commission on profits of Company; contributory pension fund. Bungalow, essential furniture, and servants provided.—Applications, with copies of 3 testimonials and names of 3 other persons for reference purposes, to: Box J211, c/o STREET'S, 110, Old Broad-street, London, E.C.2.

Modern freehold Georgian style House. 75, Lambton-road, Wimbledon. Ideal for professional practice. On 2 floors. 5 bedrooms, 5 reception rooms (2 forming suite with separate entrance). Garage. Garden. Auction sale 25th January.—Particulars from auctioneers: BENTALLS (Telephone: Kingston 1001).

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: M.O. LABORATORIES LTD., 24, Welbeck-way, London, W.1.

Guineapigs. Orders, large or small, attended to promptly. —A. COOPER, 22, Glenfield, Shipley, Yorks.

Microscopes. Second-hand Bargains, guaranteed sound order. Write for List. Deferred terms if required.—WALLACE HEATON LTD., 127, New Bond-street, W.1 (MAYfair 6511).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141) who are specialists in this kind of work.

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Literature is available upon request

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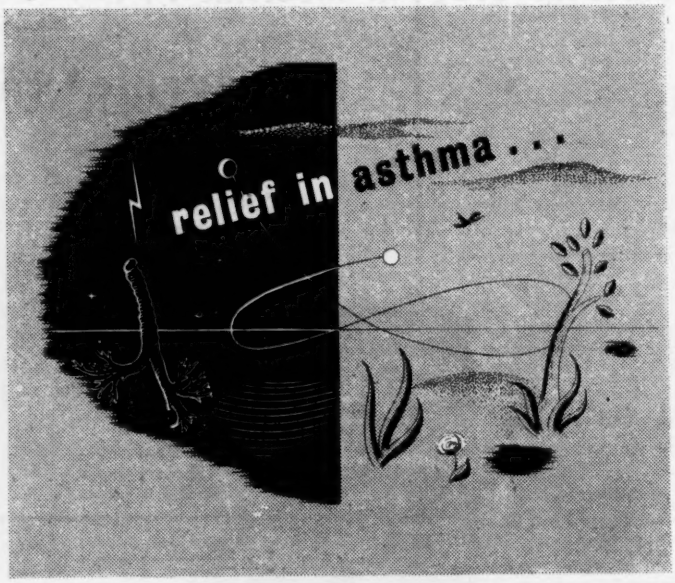

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